26-58-6-20/56

AUTHOR: Kurnosova, L.V., Candidate of Physical and Mathematical Sciences

TITLE: Some Results of Investigations by Aid of Artificial Earth Satellites (Nekotoryye rezul'taty issledovaniy pri pomoshchi iskusstvennykh sputnikov zemli) On the Intensity of Cosmic Radiation (Ob intensivnosti kosmicheskogo izlucheniya)

PERIODICAL: Priroda, 1958, Nr 6, p 85-86 (USSR)

ABSTRACT: One of the tasks of Sputnik II was to measure the intensity and variations of intensity of cosmic rays. This was performed by means of two halogen counters of cosmic particles. Their measurements were controlled by S.N. Vernov, Member-Correspondent of the USSR Academy of Sciences, and his scientific coworkers N.L. Grigorov, Yu.I. Logachev and A.Ye. Chudakov of the MGU. The facts obtained by Sputnik II showed that up to 700 kilometers' altitude, the intensity of cosmic radiation rose by 40 % as compared with that at 200 kilometers' altitude. The sudden increase in the intensity of cosmic radiation was not registered by terrestrial stations over the same period. There is 1 graph and 1 Soviet reference.

26-58-6-20/56

Some Results of Investigations by Aid of Artificial Earth Satellites. On the Intensity of Cosmic Radiation

ASSOCIATION: Fizicheskiy institut imeni P.N. Lebedeva Akademii nauk SSSR (Moskva) (Institute of Physics imeni P.N. Lebedev of the USSR Academy of Sciences, Moscow)

Card 2/2 1. Satellites 2. Cosmic rays-Intensity 3. Satellites-Instrumentation

KURNOSOVA, L.V.; LOGACHEV, V.I.; RASORENOV, L.A.; and FRADKIN, M.I.

"Cosmic Ray Investigation by the Second Cosmic Rocket Landed on the Moon."

report presented at the First Intl Space Symposium, Nice, France, January, 1960. Academy of Sciences, Moscow, USSR.

Name : KURNOSOVA, L. V. /a woman/.

Title : Candidate of Physico-Mathematical Sciences.

Remarks : V. L. GINZBURG* and L. V. KURNOSOVA are the authors of an article entitled "The Sun, Cosmic Rays, and the Sputniks".

Source : M: Stantsii v Kosmose (Stations in Outer Space), a collection articles, published by the USSR Academy of Sciences, Moskva, 1960, with foreword by Academicians A. N. Nesmeyanov and A. V. Topchiyev, p. 115.

101 10

* Corresponding Member of the USSR Academy of Sciences.

KURNOSOVA, L.V.; LOGACHEV, V.I.; RAZORENOV, L.A.; FRADKIN, M.I.

Studying cosmic rays during the flight of the second cosmic rocket to the moon. Isk.sptu.Zem. no.5:30-37 '60. (MIRA 13:5)

(Cosmic rays) (Lunar probes)

KURNOSOVA, L. ..., ALEKSEYEV, I. A., [illegible]

"The results of measurements of nuclear component of cosmic rays of solar origin with Sputniks and Lunniks."

report to be ~~submit~~ submitted for the IAU Symposium on the Corona, Claudcroft, New Mexico, 28-30 Aug 1961.

KURNOSOVA, L. V., LOGACHEV, V. I., RAZORENOV, L. A. and FRADKIN, M. I.

"Observation of the Radiation Anomalies at the Altitudes of 200-300 km."

Report presented at the International Conference on Cosmic Rays and Earth Storm, 4-15 Sep 61, Kyoto, Japan.

89690
S/026/61/000/001/007/007
A166/A027

9.9100 (also 1046, 1060)
3.1800 (1041, 1062, 1178)

AUTHORS: Kurnosova, L.V., Razorenov, L.A., and Fradkin, M.I., Candidates of Physics and Mathematics

TITLE: The Sun's Cosmic Radiation

PERIODICAL: Priroda, 1961, No. 1, pp. 94-96

TEXT: The article lists some results of studies of the sun's primary radiation. On 12 September 1959 the Cerenkov counters on board the second Soviet space rocket recorded an 11.8-fold increase in the number of atomic nuclei with an atomic number $Z \geqslant 15$. The increase lasted for 17 minutes, after which the counters registered a normal radiation intensity. At the same time the incidence of nuclei with $Z \geqslant 2$ and $Z \geqslant 5$ increased by approximately only 1.3 and 1.5-fold respectively. Analysis showed that the rise in $Z \geqslant 5$ nuclei was due almost entirely to the increase in nuclei with $Z \geqslant 15$. The probability that this phenomenon was a statistical fluctuation is in the order of 1:100,000. At the same time ground stations on earth recorded radio-frequency emission flares. The Krakovskaya observatoriya (Krakov Observatory) noted a brief flare at 810 Megacycles lasting for 0.3

Card 1/2

The Sun's Cosmic Radiation

S/026/61/000/001/007/007
A166/A027

minute. The probability that the two phenomena are coincidental is less than one percent. On the same day at 1137 hr. the observatory of the Institut zemnogo magnetizma (Institute of Geomagnetism) near Moscow noted a solar radio flare at 208 Megacycles and an intensity of $170 \cdot 10^{-22}$ watt meter^{-2}. cycle^{-1}, compared to an average intensity in this band from 9-12 hr. of $15 \cdot 10^{-22}$. Two further instances of increased nuclear activity ($Z \geqslant 15$) were recorded on the same day at 1257 and 1523 hr. Indications are that on the sun there occur processes whereby nuclei are accelerated to energies exceeding $1.5 \cdot 10^{9}$ ev/nucleon; such processes favor heavy nuclei. Upon leaving the sun the accelerated nuclei flow as compact groups in space. There are 5 graphs and 1 photo.

ASSOCIATION: Fizicheskiy institut im. P.N. Lebedeva AN SSSR (Physical Institute im. P.N. Lebedev, AS USSR), Moscow

Card 2/2

25992
S/560/61/000/006/010/010
E032/E114

3.2410

AUTHORS: Kurnosova, L.V., Razorenov, L.A., and Fradkin, M.I.

TITLE: Short-period increases associated with solar activity in the intensity of the nuclear component of cosmic rays

PERIODICAL: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli. No. 6, Moscow, 1961. pp. 132-138

TEXT: The nuclear component of cosmic rays was investigated with an apparatus set up on the second Soviet space rocket. This apparatus was described by the present authors and V.I.Logachev in Ref.1 (same journal, No.5, izd-vo AN SSSR, 1960, p.30) and consisted of two independent Cherenkov counters which recorded nuclei moving with relativistic velocities. During the flight of the rocket the number of recorded nuclei with $Z \geqslant 15$, 5 and 2 was 100, 3000 and approximately 30 000 respectively. The counting rates, averaged over long periods of time, were found to be practically constant after the rocket left the outer radiation belt. However, sudden departures of the counting rate from the average value were noted over short time intervals. The most

Card 1/6

Short-period increases associated with...

pronounced of these cases of sudden increase in the intensity of the nuclear component was recorded on September 12 at 11 h 27 min UT. In this case the counting rate of both detectors showed an increase which continued for approximately 17 min. This case is illustrated in Fig.1 which shows the intensities of the various groups of nuclei as functions of time. The first three graphs show the intensity of nuclei with $Z \geqslant 2$, 5 and 15 respectively (the intensity is plotted in particle/min along the vertical axis and the time along the horizontal axis). The fourth figure shows a graphical representation of chromospheric flares. They are represented by triangles whose bases correspond to the interval between the beginning and the end of the flare and whose apexes indicate the position of the maximum brightness of the flare. The fifth graph shows the average intensity of the solar radio emission on 810 Mc/s and the last graph shows the solar radio emission on 208 Mc/s (the intensity is plotted in $wm^{-2}cps^{-1} \times 10^{22}$). Other similar changes in the intensity of the nuclear component were also recorded, for example, on September 12 at 12 h 57 min and at 15 h 23 min on the same day. Statistical analysis of these results leads the present authors to conclude that these rapid increases

Short-period increases associated ....

in the intensity of the nuclear component are real and appear to be associated with solar activity. A somewhat similar effect has been reported by H.R. Anderson (Ref.5: Phys. Rev., V.116, 461, 1959), who noted short-period increases in the total intensity of cosmic rays. The variations in the nuclear component are characterized by the fact that the most clearly defined changes occur in the intensity of the heavy nuclei. The present authors suggest that it may be that there is some mechanism on the sun whereby nuclei are accelerated to energies in excess of 1.5×10^9 ev/nucleon and, apparently, the heavier nuclei are preferentially accelerated. The accelerated nuclei leave the sun and move in space in compact groups. However, in order to establish this, further satellite and space rocket experiments are necessary. Acknowledgments are made to Professor V.L. Ginzburg who directed this work, Professor N.A. Dobrotin and Professor G.T. Zatsepin for discussing the results obtained, and E.I. Mogilevskiy for supplying radio data.
There are 3 figures and 8 references: 6 Soviet and 2 English.
The English language references read as follows:
Ref.5: as quoted above.
Ref.6: P. Meyer, Phys. Rev., V.115, 1734, 1959.
Card 3/6

26820
S/560/61/000/008/009/010
E032/E514

17.2400
24.6700

AUTHORS: Kurnosova, L. V., Razorenov, L. A. and Fradkin, M.I.

TITLE: Investigation of the nuclear component of cosmic rays with the third space rocket

PERIODICAL: Akademiya nauk SSSR, Iskusstvennyye sputniki zemli, 1961, No.8, pp.87-89

TEXT: The nuclear component of the primary cosmic rays was investigated with a Cherenkov counter mounted on the third space rocket and was similar to that employed on the second rocket (Ref.1: L. V. Kurnosova, V. I. Logachev, L. A.Razorenov and M. I. Fradkin. Iskusstvennyye sputniki Zemli, No.5, izd-vo AN SSSR, 1960, p.30). The counter was placed inside a hermetically sealed container, whose thickness was equivalent to 1 g/cm^2 of aluminium. The screening of the counter by neighbouring instrumentation was roughly the same as in the case of the second space rocket. A record was made of nuclei with charges greater than or equal to 2, 14-15 and 28-30. The average number of counts in the $Z \geqslant 2$, $Z \geqslant 14$-15 and $Z \geqslant 28$-30 channels was found to be 10.3 ± 0.2, 0.09 ± 0.02 and 0.013 ± 0.001 per min, respectively. Analysis of the

Card 1/2

results obtained in the $Z \geqslant 2$ channel did not resolve the problem as to why there was an enhanced counting rate in the α-particle channel, which was observed with the second rocket between 10 000 and 30 000 km from the Earth's centre. The number of counts in the $Z \geqslant 14$-15 channel is in good agreement with the results obtained with the second space rocket, the corresponding intensity of nuclei in this group being 0.4-0.5 particles m^{-2} sec^{-1} $sterad^{-1}$. The corresponding figure for the $Z \geqslant 28$-30 channel was found to be $\sim$ 0.1 particles m^{-2} sec^{-1} $sterad^{-1}$, which is very much greater than the flux obtained for the $Z \geqslant 30$-40 range with the third satellite (Ref.2: L. V. Kurnosova, L. A. Razorenov and M. I. Fradkin. Iskusstvennyye sputniki Zemli, No.2, izd-vo AN SSSR, 1958, p.70). This may be due to the fact that the cosmic rays have a large ion component ($Z \approx$ 26-28).
Acknowledgments are expressed to G. S. Dragun, V. I. Logachev, V. V. Marevskiy, V. D. Razhin, I. A. Sirotkin who took part in the building, adjustment and tests on the instrument. There are 2 Soviet references.

SUBMITTED: December 27, 1960

Card 2/2

26821
S/560/61/000/008/010/010
E032/E514

17.2400
24.6700

AUTHORS: Kurnosova, L. V., Kolobyanina, T.N., Logachev, V.I., Razorenov, L.A., Sirotkin, I.A. and Fradkin, M.I.

TITLE: Detection of anomalies in the radiation above the southern part of the Atlantic Ocean at altitudes between 310-340 km

PERIODICAL: Akademiya nauk SSSR, Iskusstvennyye sputniki zemli, 1961, No.8, pp.90-93

TEXT: The second Soviet satellite carried a counter telescope designed to record the total cosmic ray intensity. This telescope was a part of a more complex device whose function was to record the nuclear cosmic ray component. A brief description of the apparatus was given by S. N. Vernov, V. L. Ginzburg, L. V. Kurnosova, L. A. Razorenov, M. I. Fradkin (Ref.1: UFN, 63, No.1b, 131, 1957). The present paper is concerned only with the anomalously large counting rates obtained while the satellite was passing over certain regions of space. The telescope consisted of two groups of counters with effective areas of 120 and 25 cm^2. The distance between them was 35.8 cm. The amount of matter between the two groups of counters was about 4 g/cm^2 (largely perspex).

Card 1/4

Thus, the telescope recorded electrons with energies > 8 MeV and protons with energies > 60 MeV. The particle flux recorded by the telescope was greater than the cosmic ray flux at all the points where the measurements were recorded. In the region of the equator the average flux was 1.2 particle cm^{-2} sec^{-1}, while at high altitudes the figure was 3.3 particle cm^{-2} sec^{-1}. Another unexpected result was the discovery of regions with anomalously large intensities. Among these regions was that above the southern part of the Atlantic Ocean where on August 19, 1960 there was an increase in the counting rate every time the satellite passed through the region. This is indicated by Fig.1 which shows the counting rate as a function of local Moscow time. The three peaks (1,2,3) correspond to the passage of the satellite through the anomaly. The anomaly lies between 25 and 50° S and 0 and 55° W. A further anomaly was discovered between 50 and 65° S and 30° W and 40° E. A third anomaly was found in the northern hemisphere between 60 and 65° N and 137 and 170°E. It is suggested that the northern anomaly may be associated with the outer radiation belt and is affected by solar flares. The South Atlantic and Southern anomalies may be associated with the existence in the southern

hemisphere of large negative magnetic anomalies (Ref.4: B. M. Yanovskiy. Zemnoy magnetizm. M., GTTI, 1953), i.e. regions in which the magnetic field strength is lower than the normal field strength. A. J. Dessler (Ref.5: J. Geoph. Res., 64, 713, 1959) has suggested that negative anomalies may act as sinks for the charged particles in radiation belts. V. L. Ginzburg has pointed out to the present authors that T. D. Carr, A. G. Smith and H. Bollhagen (Ref.6: Phys. Rev. Lett., 5, 418, 1960) have discussed the variation in the intensity of radio-waves of Jupiter and have pointed out that the longitude dependence of this intensity becomes understandable if it is assumed that there are magnetic field anomalies on Jupiter. In such regions the charged particle concentration will be enhanced and there will be an increase in the radio emission. This effect may be analogous to the increase in the intensity of radiation in the region of magnetic anomalies reported in the present paper. Acknowledgments are expressed to Professor V. L. Ginzburg and Professor N. A. Dobrotin for their advice. There are 2 figures and 6 references. 4 Soviet and 2 non-Soviet.

SUBMITTED: December 27, 1960

Card 3/4

9.6150
21.6000

32719
S/560/61/000/009/009/009
D045/D114

AUTHORS: Dragun, G. S., Kurnosova, L. V., Logachev, V. I., Razorenov, L. A., Sirotkin, I. A., and Fradkin, M. I.

TITLE: Equipment for investigating the nuclear components of cosmic rays installed on space rockets and artificial earth satellites

SOURCE: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli. No. 9, Moscow, 1961, 86-110

TEXT: Equipment installed on the third Soviet artificial Earth satellite and on space rockets, for investigating the nuclear components of cosmic rays, is described. The results of the measurements carried out with the aid of the described devices have already been published in previous issues of the journal. All the devices consist of the following basic elements: a charged particle detector (integral Cherenkov counter); an electronic system for amplifying signals, for selecting the required ionizing events and for storing them; and elements for matching the photomultiplier output with the input of the electronic circuit and the output of this circuit with the radiotelemetric system. A block diagram of a unit for recording the nuclei

Card 1/3

Equipment for investigating the ...

the triggers of the accumulating system can be transmitted through the radiotelemetric system. The following parts of the radio system are described and illustrated: emitter follower; flip-flop-cells; and summation cells. The described parts were used in designing devices for measuring nuclei beyond the edge of the atmosphere; depending on the problems set and the actual conditions, a final selection of the parameters was made and essential changes in individual elements carried out. Two diagrams are included showing the arrangement of devices for registering nuclei with (1) $Z \geqslant 5$ and $Z \geqslant 15$, and (2) $Z > 2$. The authors thank radio technician V. Marevskiy, laboratory worker V. Razhin and designer G. Yegorov for their cooperation. There are 29 figures and 7 Soviet references.

SUBMITTED: April. 17, 1961

X

3.2420(1482,2806,1049)
17 2400

33305
S/560/61/000/010/003/016
D299/D302

AUTHORS: Ginzburg, V. L., Kurnosova, L. V., Logachev, V. I., Razorenov, L. A., Sirotkin, I. A., and Fradkin, M. I.

TITLE: Study of charged-particle intensity during the flight of the 2nd and 3rd Sputniks

SOURCE: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli. no. 10. Moscow, 1961, 22-33

TEXT: During the flight of the 2nd and 3rd Sputniks, the flow of charged particles at altitudes between 187 and 339 km and latitudes of -65 to +65° was recorded by means of a telescope consisting of 2 rows of gas-discharge counters; the telescope was part of measuring equipment for cosmic rays. As a result of the measurements, the intensity of the charged particles and its latitude dependence were determined. The counting rate N_c and

Card 1/7

Study of charged-particles...

the global intensity J_{gl} at various latitudes are listed in a table. It was found that at all latitudes the recorded intensity was several times higher than the intensity of cosmic rays recorded in the stratosphere and in free space beyond the earth's magnetic field. This difference is particularly noticeable in the region of the geomagnetic equator, where the measured intensity was six times that of cosmic rays. Several regional anomalies of intensity were observed, apparently related to the anomalies of the earth's magnetic field. For the entire track of the space-ships, detailed graphs were made of the time dependence of the intensity and hence of its dependence on geographical coordinates and altitude of the space-ship. From these graphs, maps were made of the intensity distribution on the earth's surface. It is noted that, with repeated passage of the space-ship above the same terrestrial point and almost same altitude, the recorded intensity differed sometimes from that on the first passage; in some cases, the intensity was almost double. This difference

Card 2/7

Study of charged-particles...

was particularly noticeable at high latitudes. As the orientation of the apparatus changes during the second passage, this difference in intensity may not be real. The obtained equi-intensity lines for the south-Atlantic and southern anomalies constitude a slight refinement to the earlier obtained data (in the references); the maximum number of counts in the southern anomaly was 60 per second, and in the south-Atlantic anomaly it was 70 per second. The anomalies are particularly great in the Southern Hemisphere. The intensity distributions in the anomaly regions, recorded at altitudes of 306 - 339 km and at altitudes of 187 - 265 km during the two flights, differ from each other. This difference is apparently due to the different flight-altitudes. The connection between the anomalous structure of the radiation belts and the anomalies of the earth's magnetic field is evident; it would be premature, however, to assume that the regional anomalies of the magnetic field on the earth's surface have a substantial influence on charged-particle flow up to altitudes of 200 - 300 km. The many anomalies in the South- and

33305

S/560/61/000/010/003/016
D299/D302

Study of charged-particles...

North-Pole regions, their disposition and variation, suggest that these anomalies are the edges of the outer radiation belt of the earth. The latitude dependence of the intensity is shown in a graph (for the Northern Hemisphere); it is noted that, at high latitudes, the increase in intensity ceases. The obtained data on the intensity distribution give evidence of the edge effects of the radiation belts at 200 - 300 km altitude and of certain peculiar features not observed previously. In particular, the great temporal anomalies are noted; thus, the "northern anomaly" recorded on August 20, 1960, at 7 hr. 40 min. (world time) and the south-polar anomaly recorded on December 1, 1960, at 14 hr. 22 min. These anomalies are apparently due to solar activity. The line of least intensity (the "radiation equator") is shown in a figure. With regard to the composition of the radiation, it is likely that the increase in the counting rate (as compared to that from primary cosmic rays) is due to protons with $E_p >$ 60 Mev; although no definite conclusion is possible as yet, it

Card 4/7

Study of charged-particles...

is assumed (as a working model) that the inner radiation belt if formed by protons and that the number of electrons of energies higher than $\sim$ 2 Mev is small. The above results confirm the existence of a high-intensity region down to 200 km altitude (from 1000 km). On the other hand, the radiation at 50 - 150 km is practically independent of altitude. The altitude dependence of the intensity (for 200 - 2000 km) is shown in a figure. Tentatively, the altitude h and the atmospheric density ρ can be expressed by the values:

h, km	100	150	200	300	400	500
ρ, gm $\cdot$ cm^{-3}	10^{-9}	10^{-11}	10^{-12}	10^{-13}	2×10^{-14}	2×10^{-15}

h, km	600	700	800	900	1000
ρ, gm $\cdot$ cm^{-3}	6×10^{-16}	2×10^{-16}	6×10^{-17}	3×10^{-17}	10^{-17}

Card 5/7

Study of charged-particles...

On the basis of the incomplete data available, the internal radiation-belt in the equatorial region for altitudes above 400 - 600 km can be approximated by a very simple model, where only ionization losses are taken into account. At higher latitudes, the pattern is more complicated; it becomes necessary to render more precise the composition, spectrum and altitude-variation of the charged particles. At altitudes below 400 - 600 km, considerable deviations from the formula $J \sim \rho^{-1}$ occur. This is due to diffusion of the particles in a direction transverse to the magnetic field; this diffusion mechanism is related to collisions between particles. A second diffusion mechanism exists, related to the presence of electric fields E which cause particle-drift. The diffusion processes require further investigation. Finally, the radiation dose is estimated beneath a layer of matter of the order of 4 gm/cm^{-2} at an altitude of 200 - 300 km. Assuming recorded proton energies (in the equa-

Card 6/7

Study of charged-particles...

torial region) of $E_p \geq 60$ Mev, the daily radiation dose constitutes approximately 30% of the permissible dose. In the region of the south-Atlantic anomaly at 300 km altitude, the radiation dose is by an order of magnitude higher than at the equator. There are 10 figures, 1 table and 10 references: 7 Soviet-bloc and 3 non-Soviet-bloc (including 2 translations). The reference to the English-language publication reads as follows: S. Yoshida, G. H. Ludwig, J. A. Van Allen, J. Geophys. Res., 65, 807, 1960.

SUBMITTED: May 15, 1961

X

Card 7/7

3.2100 (also 4303)

37199
S/560/61/000/011/005/012
E032/E514

AUTHORS: Veprik, Ya.M., Kurnosova, L.V., Razorenov, L.A., Tolstov, K.D., Fradkin, M.I. and Chukin, V.S.

TITLE: Experiment on the development of photographic emulsions on board the second cosmic spaceship

SOURCE: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli, no.11. Moscow, 1961. Rezul'taty nauchnykh issledovaniy, provedennykh vo vremya poletov vtorogo i tret'yego kosmicheskikh korabley-sputnikov, 35-41

TEXT: The second Soviet cosmic spaceship carried stacks of thick nuclear emulsions. Owing to the fact that the spaceship remained in orbit for a considerable time, the number of particles recorded in the emulsions was very large, which could complicate subsequent scanning and identification of particle tracks. It was, therefore, necessary to develop the emulsions before too many particles had been recorded. An account is given in the present paper of how the emulsions were in fact developed on board the spaceship. The operation was carried out in four stages, namely: 1) exposure of the emulsions to the radiations for a given time,

Card 1/2

2) development, 3) storage of the emulsions (latent-image centres produced during this period could not be developed), 4) subsequent laboratory analysis on the Earth's surface. The whole operation was carried out in a hermetically sealed container. The emulsion stack (20 unbacked emulsions 300 μ thick each) had to be so arranged that after the exposure the emulsions could be separated from each other and the developer let in. This was done by a piston device (a schematic drawing of the latter is reproduced). After this operation the developer was removed and a stopping solution was introduced. The emulsions remained in this solution until they were returned to the laboratory for final treatment. It was found that relativistic tracks were easily visible in these emulsions, although the sensitivity to the latter turned out to be somewhat lower than usual. Two particle-track microphotographs are reproduced to illustrate the possibilities of the method. There are 3 figures.

SUBMITTED: July 7, 1961

Card 2/2

KURNOSOVA, L.V., kand.fiz.-mat.nauk; RAZDRENOV, L.A., kand.fiz.-mat.nauk; FRADKIN, M.I., kand.fiz.-mat.nauk

Cosmic radiation from the sun. Priroda 50 no.1:94-96 Ja '61. (MIRA 14:1)

1. Fizicheskiy institut im.P.N.Lebedeva AN SSSR, Moskva.
(Cosmic rays) (Solar radiation)

KURNOSOVA, L.V.; LOGACHEV, V.I.; NAZORENOV, L.A.; FRADKIN, M.I.

Radiation effects at a great altitude. Priroda 50 no.4:85-87 Ap '61. (MIRA 14:4)

1. Fizicheskiy institut im. P.N.Lebedeva AN SSSR, Moskva.
(Cosmic radiation)

KURNOSOVA, L.V.; LOGACHEV, V.I.; RAZORENOV, L.A.; FRADKIN, M.I.

Radiation effects at a great altitude. Priroda 50 no. 4:86 Ap '61. (MIRA 14:4)

(Altai Territory--Coal)

KURNOSOVA, L.V., CHUKIN(fnu), RAZORENOV, L.A., FRADKIN, M.I., TOLSTOV, K.D., VEPRIK(fnu)

"Controlled exposition of nuclear emulsions on sputniks"

Fourth International Colloquium on Photography (Corpuscular) - Munich, West Germany, 3-8 Sep 62

3.2410
3.2470

42126

S/203/62/002/002/001/017
1046/1246

AUTHORS: Ginzburg, V. L., Kurnosova, L. V., Razorenov, L. A., and Fradkin, M. I.

TITLE: Some investigations of the cosmic ray nuclear component and of the radiation belts of the earth on Soviet satellites and rockets. Review.

PERIODICAL: Geomagnetizm i aeronomiya, v. 2, no. 2, 1962, 193–232

TEXT: 1) Measurements on groups of nuclei with $Z \geqq 2$, $Z \geqq 5$, $Z \geqq 12$ to 14, $Z \geqq 15$, $Z \gtrsim 28$ to 30, and estimates of the relative intensity of the stream of very heavy nuclei ($Z > 30$) indicate that the nuclear component of cosmic rays drops very sharply in intensity from $Z \gtrsim 28$ to $Z > 30$. 2) The nuclear-component intensity increases in correlation with the solar activity; at energies E 10^9 eV, some selective acceleration mechanism on the sun accelerates preferably the heavier nuclei. 3) Measurements of the latitudinal effect show that, at energies between ~ 1.8 and 7.5 BeV/nucleon, the energy spectra are identical for groups of nuclei with $Z \geq 2$, $Z \geqq 5$, $Z \gtrsim 12$ to 14 (differences in spectral indices do not exceed 10 to 20%). 4) The charge spectra of nuclei indicate that the ratio of the Li, Be, B nuclear group to the $Z \geqq 6$ group is 53 ± 15%. 5) The intensity maximum of the outer radiation belt shifted 10^4km towards the surface of the earth during the time interval between the launchings of orbital spaceships I and II (from January to September, 1959).

Card 1/2

Some investigations of the cosmic ray...

S/203/62/002/002/001/017
I046/I246

6) At altitudes of 200 to 300 km in the 65N to 65S belt the radiation count is in excess of what could have been expected from primary cosmic rays; on the equator, the global radiation intensity is 6 to 7 times as high as the cosmic ray intensity. This phenomenon remains still unexplained 7) Two radiation-intensity anomalies were discovered, viz., the South-Atlantic anomaly at an altitude of 340 km and the Southern anomaly at 194 to 340 km above the Antarctic coast, both being closely associated with the geomagnetic anomalies. In August and December 1960, the lower boundary of the South-Atlantic anomaly was mapped at an altitude of 265 to 306 km. There are 15 figures, 7 tables and 70 references.

Card 2/2

3/269/63/000/003/007/036
A001/A101

AUTHORS: Ginzburg, V., Kurnosova, L., Razorenov, L., Fradkin, M.

TITLE: An orbital laboratory. Some outer space studies by means of satellites and rockets

PERIODICAL: Referativnyy zhurnal, Astronomiya, no. 3, 1963, 25, abstract 3.51.204 ("Aviatsiya i kosmonavtika", 1962, no. 6, 13 - 22)

TEXT: The authors present principal results of studying primary cosmic rays, obtained by means of satellites and rockets, and the tasks of further investigations. It has been established, by means of Cherenkov counters, that abundance of lithium, beryllium and boron in cosmic rays exceeds hundred-fold that expected; it follows thereof, that cosmic rays passed a layer of interstellar gas during their path in the solar system. The spectrum of all nuclei is independent of the ordinal number in Mendeleyev's table; the flux of nuclei with numbers greater than 30 is less than the flux of nuclei with numbers greater than 15 by a factor of at least 10,000. The second space rocket launched towards the Moon and the third space ship recorded a sharp increase of the number of nuclei

Card 1/2

S/269/63/000/003/007/036
A001/A101

with atomic numbers 15 and higher. It is assumed that the nuclei recorded are of solar origin, which is confirmed by the analysis of data on other manifestations of solar activity during the same time. Earth's radiation belts were discovered. The lower part of the radiation belts attains an altitude of ~ 200 km, although the belts are clearly pronounced only at higher altitudes (600 - 1,000 km and higher). It was discovered that radiation belts have "spurs", the lower of which are related to magnetic anomalies. The tasks of further investigations are studying Earth's radiation belts, the proton component of galactic and solar cosmic rays, "high-latitude cut-off" in the spectrum of cosmic rays, and electronic component of galactic and solar cosmic rays.

T. Kasimenko

[Abstracter's note: Complete translation]

1.3982

S/560/62/000/012/002/014
I063/I263

AUTHORS: Kurnosova, L.V., Logachev, V.I., Razorenov, L.A. and Fradkin, M.I.

TITLE: Energetic spectra of different nuclear groups of the cosmic radiation as measured by Cherenkov detectors in ship-satellites

PERIODICAL: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli no.12, 1962, Moscow, 16-30

TEXT: The energetic spectra of different nuclear groups within the range of 10^9 - 10^{10} eV/nucleon were investigated in the second and third Soviet space ship-satellites. In the former three independently functioning Cherenkov detectors were used: one of the integral type recorded nuclei with charges $Z \geq 5$, $Z \geq 15$, and $Z > 34$ and two detectors of the differential type recorded the charge of nuclei

Card 1/3

S/560/62/000/012/002/014
I063/I263

Energetic spectra of different nuclear....

from helium up to oxygen. The directions of the nuclei were determined by a cosmic-ray telescope. Similar instruments in the third ship-satellite recorded nuclei with the following charges: $Z \geq 5$, $Z \geq 12 - 14$, $Z \geq 31 - 34$ and $Z > 34$. The intensity of each nuclear group was measured within the geographical latitude range of -65° to +65°. Considering the low-energy limit of charged particles arriving vertically at each geomagnetic latitude the integral spectra of the nuclear groups were deduced from flux measurements at the different geomagnetic latitudes. Each spectrum represented an average of both identical plus and minus latitudes. The dependence of the flux of nuclei with $Z \geq 2$, $Z \geq 4 - 5$ and $Z \geq 12 - 14$ on the latitude as measured in the third ship-satellite was similar within the experimental error. An increase of the flux with latitude was observed for latitudes from 0° up to 45°, thereafter the flux remained practically constant... The integral energetic spectra of the different

Card 2/3

Energetic spectra of different nuclear... S/560/62/000/012/002/014
I063/I236

nuclear groups showed the same behavior. The low-energy cutoff of the particles was observed to occur at 45° latitude instead of 500-550 (high-latitude cutoff). This is explained by the energy threshold of the detectors. (2.2 beV/nucleon). The integral spectra for energies higher than the threshold value were assumed to be represented by a power function. The power-index of each group was measured from the slope of the straight line obtained when the flux was plotted against the energy per nucleon in a double logarithmic scale. No significant difference was observed between the power-indices for nuclear groups having $Z \geq 2$, $Z \geq 4 - 5$, $Z \geq 12 - 14$ as measured in the third ship-satellite. The value of the power-index of nuclei with $Z \geq 15$ as measured in the second ship-satellite was somewhat higher than the values of the other nuclear groups, but as there is not sufficient data for statistical analysis in this group, no conclusions can be made about its spectrum. There are 8 figures and 7 tables.

Card 3/3

3,2410
3,2410

43983

S/560/62/000/012/003/014
I063/I263

AUTHORS: Kurnosova, L.V., Razorenov, L.A., and Fradkin, M.I.

TITLE: A case of a short-term increase of heavy nuclear intensity during the flight of the third satellite space-ship

SOURCE: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli, no.12, Moscow, 1962, 31-34

TEXT: This increase was observed during the 24 hours flight of the third Soviet space-ship on December 1, 1960. Nuclear components of the cosmic radiation having $Z \geq 5$, $Z \geq 12 \div 14$, $Z \geq 31 \div 34$, $Z > 34$ were detected by a Cherenkov detector of the integral type, whereas for nuclei with $Z \geq 2$ the differential type was used. Only

Card 1/3

S/560/62/000/012/003/014
I063/I263

A case of a short-term increase...

Simultaneously with this nuclear intensity increase, an outburst in the solar chromosphere of the 1^+ class was observed, as well as an increase of the solar radio emission at the frequency of 208 Mc.. The concurrence of these events suggests that relativistic nuclei are generated on the sun. The increased intensity of nuclei with $Z \geq 12$ could be the result of a preferential acceleration of the heavier nuclei, whereas the higher number of the α particles may be explained by the relatively high abundance of helium in the sun, so that a large number of these particles are involved in the acceleration process. There is 1 figure. The English-language reference is: C.E.Fichtel, D.E.Guss, Phys. Rev. Lett., 6, 1961, 495.

SUBMITTED: September 12, 1961

Card 3/3

S/048/62/026/006/014/020
B125/B102

3 2420

AUTHORS: Ginzburg, V. L., Kurnosova, L. V., Logachev, V. I., Razorenov, L. A., and Fradkin, M. I.

TITLE: Temporary increases in the intensity of the nuclear cosmic-ray component induced by solar activity and investigation of the radiation intensity at altitudes from 200 to 300 km

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 6, 1962, 782-798

TEXT: During the flight of the second Soviet space rocket more than 100 nuclei of $Z \geq 15$, more than 3000 of $Z \geq 5$ and more than 30,000 of $Z \geq 2$ were measured by means of two Cherenkov counters working independently. On the second and third Soviet space ships a current of charged particles was measured by a telescope consisting of gas-discharge counters at altitudes between 187 and 339 km, in latitudes ranging from -65° to +65°. Variation in number of heavy nuclei with $Z \geq 15$ was considerable but that of α-particles was smaller. At altitudes from 187 to 339 km the counting rate of the telescope was several times greater than otherwise by reason

Card 1/8 2

Temporary increases in the ...

of the solar activity. On the equator, at an altitude from 306 to 339 km, the global intensity is 1.36 and in higher latitudes 3.3 particles cm^{-2} sec^{-1}. The charged-particle flux intensity of the anomalies in the southern part of the Atlantic Ocean exceeds that in the corresponding geomagnetic latitudes by two orders of magnitude. In 330 km an area of smaller intensity separates the South Atlantic Anomaly (a "sleeve" of the inner radiation belt) from the Southern Anomaly connected with the outer radiation belt. The particles recorded in the equatorial area are protons of at least 60 Mev or electrons of at least 8 Mev. There are obviously very many particles of smaller energy in the anomalies. The line of the smallest radiation intensity lies in an altitude from 187 to 339 km and on the western hemisphere farther south than the geometrical equator. In higher latitudes, owing to solar activity, the intensity of particle currents is subject to considerable temporal variations. The actual mechanism of acceleration and ejection of heavy particles on the sun is not known hitherto. There are 12 figures and 2 tables.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute imeni P. N. Lebedev of the Academy of Sciences USSR)

. L. GINZBURG, L. V. KURNOSOVA, V. I. LOGACHEV, L. A. RAZORENOV, M. I. FRAN

...mary cosmic radiation investigation.

...eport submitted for the 8th Intl. Conf. on Cosmic Rays (IUPAP), Jaipur Indi..., 2-14 Dec 1963

ACCESSION NR: AT3006860 S/2560/63/000/015/0066/0070

AUTHORS: Kurnosova, L.V.; Razorenov, L.A.; Fradkin, M.I.

TITLE: A short-term event of increased radiational intensity recorded on Sputnik-2 on 20 August 1960

SOURCE: AN SSSR. Iskusst. sputniki Zemli, no. 15, 1963, 66-70

TOPIC TAGS: satellite, Earth satellite, artificial satellite, artificial Earth satellite, Sputnik, Sputnik-2, telescope, gas-discharge counter, Cherenkov counter, cosmic radiation, proton, solar proton, high-energy nucleus, increase in cosmic-ray intensity, cosmic ray, cosmic-ray intensity

ABSTRACT: With reference to previously reported observations of regions with increased intensity of charged particles termed the "South Atlantic radiational anomaly" (one near the Brazilian coast and another similar region near the shores of Antarctica), literature sources for which are adduced, the paper reports the observation of a similar high-intensity region by the gas-discharge-type counter telescope employed in the Sputnik-2 flight on 20 August 1960 at 0740 GCT. The increase was observed during a period when the Sputnik (S) was in the northern hemisphere at a geomagnetic latitude of 50-60°. This "northern anomaly" was

Card 1/4

observed only on a single pass of the S (Fig. 1 shows the change in counting rate of the telescope on that and adjacent passes). The briefness of the growth in intensity could possibly be attributed partly to statistical fluctuations. However, the increase in the counting rate of the telescope that cannot be attributed to fluctuations alone is also of the order of 3-4 min. The extremely abrupt character of the change in counting rate can be attributed either to an actual fast change of the intensity with time or to the passing out of the S from the region in which the particles prevailed. In the first case, the short duration of the "flash" of high intensity indicates an extremely small dispersion of the particle velocities. This can only be the case if the particles have a fairly high energy, that is, they are particles with a velocity close to that of light. From a review of the fairly elevated solar activity on August 19 and 20, 1960, it is concluded that it is reasonable to assume that the counting-rate growth was evoked by a flux of solar protons and nuclei of the intermediate group generated during a chromospheric flare-up. The relatively weak increase in intensity of the nuclei of the intermediate group can be explained by the elevated energy threshold of the Cherenkov counter. The incident related suggests that it is important, at this time, to obtain long-term observations of cosmic radiation outside of the Earth's atmosphere, wherein the measurements must be constructed in such a way that changes in the intensity of the protons and various groups of nuclei over a broad energy range can be obtained. Orig. art. has

ACCESSION NR: AP4031621 S/0053/64/082/004/0585/0647

AUTHOR: Ginzburg, V. L.; Kurnosova, L. V.; Razorenov, L. A.; Fradkin, M. I.

TITLE: Investigations of the nuclear component of cosmic radiation performed on Soviet satellites and rockets

SOURCE: Uspekhi fizicheskikh nauk, v. 82, no. 4, 1964, 585-647

TOPIC TAGS: cosmic ray, satellite measurement, space probe, cosmic ray charge distribution, cosmic ray flux, cosmic ray energy spectrum, solar cosmic ray, primary cosmic radiation, nuclear active component, electron positron component, galactic cosmic ray

ABSTRACT: This review summarizes results of measurements of cosmic-ray particle fluxes, cosmic-ray energy spectra, and intensity variations of the cosmic-ray components. performed by the authors with satellite-borne equipment and reported in various publications (Geomagnetizm i aeronomiya, v. 2, 193, 1962. Iskustvenny*ye sputniki zemli, no. 2, 70, 1958; no. 5, 20, 1960; no. 8, 87, 1961; no. 12, 16, 1961; no. 6., 131, 1961; no. 12, 31, 1961; no. 15, 66, 1962. J. Phys. Soc. Japan v. 17, Suppl. A-II, 315, 1962. Izv. AN SSSR ser. fiz. v. 26, 782, 1962)..

Card 1/3

ACCESSION NR: AP4031621

The experimental results are compared with the data by others. In addition, some problems and possibilities of cosmic-ray research outside the earth's atmosphere and magnetic field are also discussed. The advantages and limitations of satellite and rocket studies are briefly enumerated. Certain features of Cerenkov counters, which provided the bulk of the information, are discussed. Difficulties in the comparison of the results of different researches and the effect of the solar-activity cycle and of the individual solar flares are extensively dealt with. The correlation with solar radio emission is also discussed in connection with the electron-positron component of cosmic radiation. The section headings are: Introduction. I. Investigation of the nuclear component of cosmic rays with Soviet satellites and space probes. 1. Procedure. 2. Chemical composition of cosmic rays, fluxes of different nuclear groups and their energy spectra. 3. Variations of the flux of the nuclear cosmic-ray component and nuclei of solar origin. II. Use of satellites and rockets to study primary cosmic radiation. 4. Nuclear component of galactic cosmic rays. 5. Solar cosmic rays and high-latitude cutoff. 6. Electron-positron component of cosmic rays. Bibliography. Orig. art. has: 31 figures, 15 tables, and 6 formulas.

Card 2/3

ACCESSION NR: AP4031621

ASSOCIATION: None

SUBMITTED: 00 ATD PRESS: 3059 ENCL: 00

SUB CODE: SV, AA NO REV SOV: 063 OTHER: 074

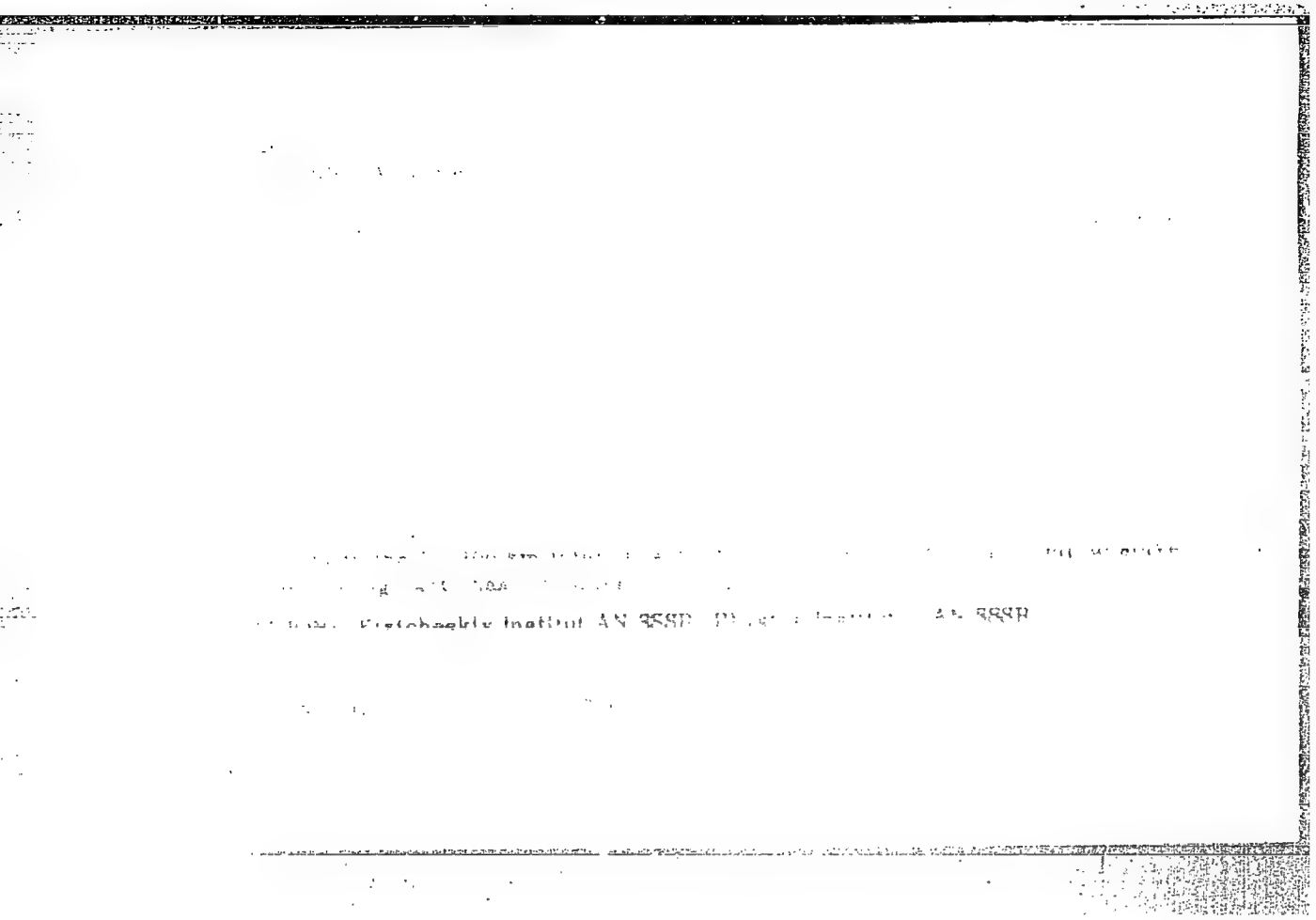
Card 3/3

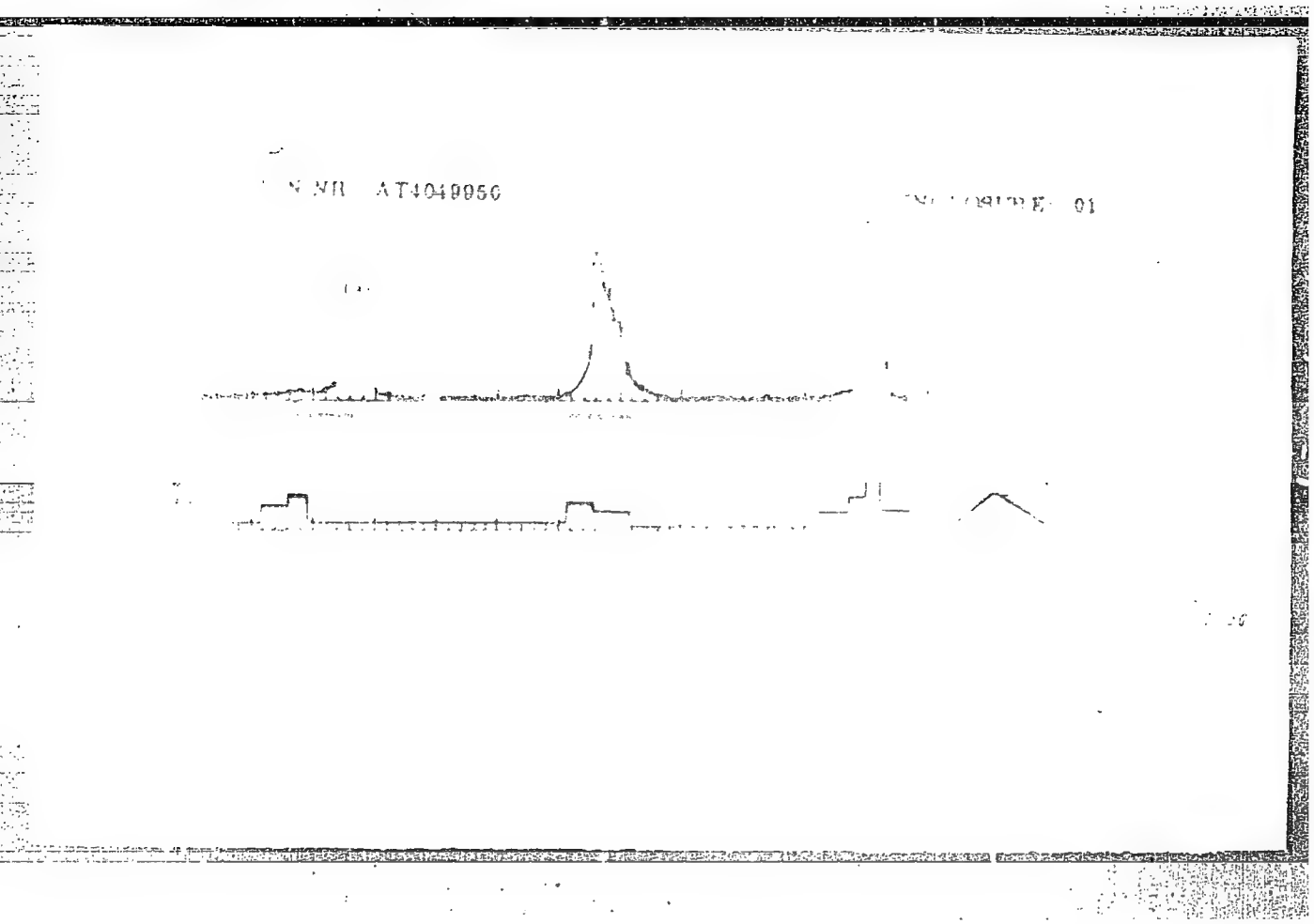
ACCESSION NR: AT4040950 S/2504/64/026/000/0003/0016

AUTHOR: Kurnosova, L.V.; Logachev, V.I.; Razorenov, L.A.; Fradkin, M.I.

TITLE: Some results of cosmic ray studies made with Soviet satellites and rockets

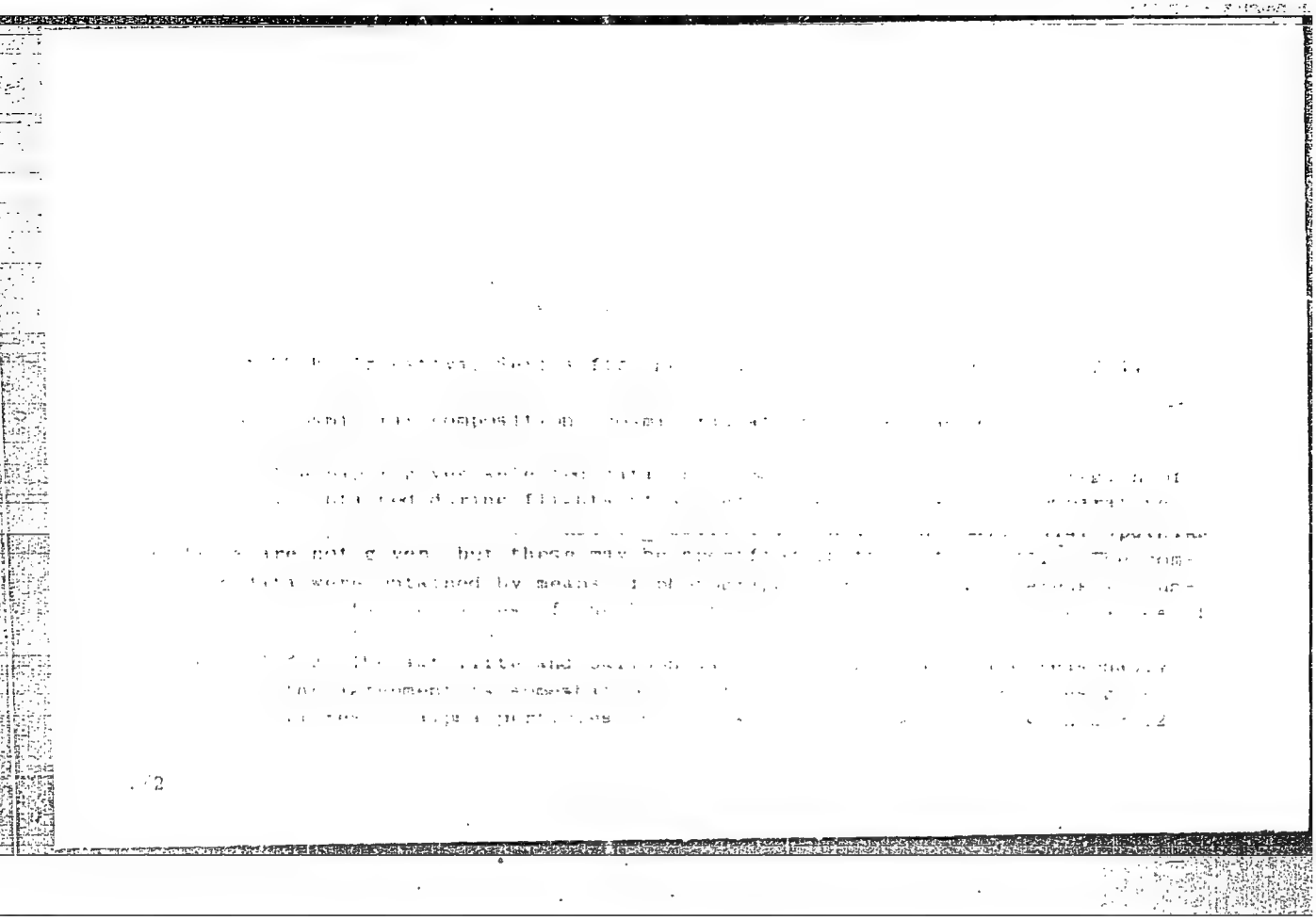
SOURCE: AN SSSR. Fizicheskiy institut. Trudy*, v. 26, 1964, Kosmicheskiye luchi





ACCESSION NR: AT4043950 ENCLOSURE: 02

Cosmic-ray flux Radiation intensity



L 21136-65

ACCESSION NR: AP5002104

... energies; the flight tr... ... of fare-up in ... ity, and variations with time of the ... the space vehi- ... outer telescope and Cerenkov ... From ...

ASSOCIATION: none

... 00 ENCL: 00

... CODE: AA NR REF SOV: 011 OTHER: 006

2/2

L 1888-66 EWT(1)/EWT(m)/FCC/T/EWA(h) IJP(c) GS/GW

ACCESSION NR: AT5022822 UR/0000/65/000/000/0008/0022

AUTHOR: Ginzburg, V. L.; Kurnosova, L. V.; Logachev, V. I.; Razorenov, L. A.; Fradkin, M. I.

TITLE: Primary component of cosmic rays

SOURCE: Vsesoyuznoye soveshchaniye po kosmofizicheskomu napravleniyu issledovaniy kosmicheskikh luchey. 1st, Yakutsk, 1962, Kosmicheskiye luchi i problemy kosmofiziki (Cosmic rays and problems in cosmophysics); trudy soveshchaniya. Novosibirsk, Redizdat Sib. otd. AN SSSR, 1965, 8-22

TOPIC TAGS: primary cosmic ray, cosmic ray particle, cosmic ray measurement, cosmic radiation composition

ABSTRACT: The article is a survey of reported experimental data on the composition of cosmic rays. The following groups of nuclei (other than protons and alpha particles) with charge $Z \geqslant 3$ are considered: (1) light nuclei with charge $3 \leqslant Z \leqslant 5$ (group L); (2) nuclei of the middle group with $6 \leqslant Z \leqslant 9$; (3) heavy nuclei with $Z > 10$ (group H). The symbol S is also used and designates nuclei with $Z \geqslant 6$ ($S = M + H$). It is shown that fluxes of different nuclei (including protons) should be compared for a given value of their hardness. As a rough general rule, nuclei of elements with atomic number Z are Z times more

1/2

L 1888-66
ACCESSION NR: AT5022822

frequent in cosmic rays than in nature. Difficulties involved in measurements of fluxes of the different groups of nuclei are described. High-altitude experiments definitely indicate the presence of lithium, beryllium, and boron nuclei (20-30% of the quantity of heavier nuclei) in the primary component of cosmic rays in the vicinity of the earth. Findings concerning the electron-positron component of cosmic rays are discussed, and the chemical composition of solar cosmic rays is considered. Differential energy spectra of protons and nuclei and their hardness spectra are analyzed. On the basis of the body of data accumulated thus far it is now possible to state that not only protons, but also multiply-charged nuclei are accelerated on the sun; however, this mechanism of particle acceleration is still unknown, and several such mechanisms may exist. Orig. art. has: 14 figures and 3 tables.

ASSOCIATION: Fizicheskiy institut im. N. P. Lebedeva AN SSSR (Physics Institute, AN SSSR)

SUBMITTED: 29Oct64 ENCL: 00 SUB CODE: AA, NP

NO REF SOV: 014 OTHER: 020

2/2

L 2326-66 EWT(1)/FCC/EWA(h) GS/GW UR/0000/65/000/000/0486/0501

ACCESSION NR: AT5023626

AUTHORS: Ginzburg, V. L.; Kurnosova, L. V.; Razorenov, L. A.; Syrovatskiy, S. I.; Fradkin, M. I.

TITLE: Some problems and perspectives in the investigation of primary cosmic rays

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 486-501

TOPIC TAGS: cosmic ray, gamma ray, x ray, solar activity, antiparticle

ABSTRACT: Problems associated with the investigation of primary cosmic rays and gamma rays are presented in a three-part report. Part I deals with the proton-nucleus component of the cosmic rays, Part II covers the electron-positron component, and Part III discusses cosmic gamma- and x-rays. Although the proton-nucleus component of primary cosmic rays has been studied quite completely, a group of problems still remains unanswered. Eight such problems discussed in Part I are: 1) energetic spectra of protons and nuclei in the energy interval below 100 Mev/nucleon. These spectra are represented by the form $N(E) \sim E^{1.8}$. 2) The relationship between fluxes of different nuclei groups (L, M, H) in the energy range 55 to 550 Mev/nucleon, which is still not well known. 3) Isotopic components of primary

Card 1/3

cosmic rays. This would require the measurement of three independent parameters such as dE/dx, E, and pc. 4) The presence of high speed antiprotons generated by the interaction of cosmic rays with interstellar media. Some measurements place the percent composition of antiparticles at 0.23%. 5) The verification of the presence of superheavy nuclei, Z > 30. 6) Estimates of the time rate of change of the fluxes in primary nuclei components which have their origin either in solar bursts or in modulated galactic cosmic rays. These intensity variations should be recorded continuously, outside the terrestrial atmosphere. 7) Intensity gradients of cosmic rays in the solar system as evidenced by data from Pioneer-5 and Mariner-1. 8) Anisotropy among particle fluxes of low, near-threshold energies. Two similar problems are discussed in Part II. Here the flux and energy spectra of primary cosmic ray electron-positron components are analyzed first, where data are shown to be rather scant. Next, the relationship between positron and electron fluxes is considered by measuring the charge composition of the primary cosmic rays. In Part III, calculation results of expected γ- and x-ray intensities from important galactic sources are considered. The γ-ray generation is attributed to processes such as π^0-meson decay, bremsstrahlung radiation of relativistic electrons and positrons, and Compton γ-rays by the scattering of photons on x-ray electrons. Experiments indicate $I_\gamma (> 50\ \text{Mev}) \leq 3.5 \times 10^{-4}$ photons/cm^2/sec/ster which is larger than expected galactic estimates. This then implies γ-rays of

L 2326-66
ACCESSION NR: AT5023626

meta-galactic origin. For lower energies (0.51 Mev) I_γ = 1.2 to 300 x 10^{-6} photons/cm^2/sec/stere. Orig. art. has: 6 tables, 2 figures, and 4 formulas. [04]

ASSOCIATION: none

SUBMITTED: 02Sep65 ENCL: 00 SUB CODE: AA, NP

NO REF SOV: 020 OTHER: 046 ATD PRESS: 4101

Card 3/3

L 1538-66 EWT(1)/FCC/EWA(h) GS/GW

ACCESSION NR: AT5023627 UR/0000/65/000/000/0501/0502

AUTHOR: Kurnosova, L. V.; Razorenov, L. A.; Logachev, V. I.; Fradkin, M. I.

TITLE: Experimental investigations of the composition of primary cosmic rays

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 501-502

TOPIC TAGS: cosmic ray, cosmic ray measurement, cosmic ray intensity, satellite, satellite mission analysis, nucleus, proton, heavy nucleus, nucleon

ABSTRACT: Results of work conducted with the help of satellites and rockets in 1958-63 for the purpose of studying the nuclear component of cosmic rays are presented. The intensities of various nuclei group streams are given, and the upper limit of the ratio of nuclear streams with $Z \geq 30$—40 to that with $Z \geq 15$ is found to be 0.01—0.03%. The ratio of a light nuclear (group L) stream to the stream of nuclei of group S = M + H was found to be $31.0 \pm 9.6\%$. The short-period intensification of nuclear streams is considered in relation to solar chromospheric flares. This intensification proves the existence of solar processes producing the acceleration of nuclei to kinetic energies exceeding $0.5 \cdot 10^9$ ev/nucleon. It is proposed

Card 1/2

L 2538-66

ACCESSION NR: AT5023627

that two mechanisms are active in the sun--one leads to the acceleration of protons and the other to the acceleration of heavy nuclei. [04]

ASSOCIATION: none

SUBMITTED: 02Sep65	ENCL: 00	SUB CODE: AA, SV
NO REF SOV: 000	OTHER: 000	ATD PRESS: 4098

Card 2/2

L 29912-66 EWG-2/EWT(1)/EC(v)-3/EWG/EWA(d)/EWA(h) TT/GS/GW
ACCESSION NR: AT5023633 UR/0000/65/000/000/0514/0528

AUTHOR: Blokh, Ya. L.; Dorman, L. I.; Kurnosova, L. V.; Logachev, V. I.; Platonov, G. F.; Razorenkov, L. A.; Sinitsina, V. G.; Suslov, A. A.; Fradkin, M. I. 76 B+1

TITLE: Some results of the study of cosmic ray nucleons by the Elektron-2 satellite

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 514-528

TOPIC TAGS: satellite, radiation, cosmic ray, cosmic radiation, nuclear particle, nucleon/Elektron 2 satellite

ABSTRACT: Included in the instrumentation of the Elektron-2 satellite (launched, Jan 1964; apogee, 68,000 km) was a combination of internal and external counters designed to register nuclear components of primary cosmic radiation. The design and calibration of this apparatus is described, and some results of partially-reduced data are discussed. One counter mounted on the external surface of the satellite was a combination of the Cerenkov and scintillation types which responded to nucleons in the atomic number range of $2 \geqslant Z \geqslant 30$. The internal counter was a Cerenkov

Card 1/6

L 2991-66
ACCESSION NR: AT5023633

type, registering at the discrete levels of Z ≥ 2, Z ≥ 5, and Z ≥ 15. All counters were shielded and were designed to register only particles with energies ≥ 600 Mev/nucl. Fig. 1 of the Enclosure gives the basic schematic of the external counter combination. The authors detail the method used to calibrate the photomultiplier outputs in terms of the Z-range of input excitation; for example, for the type FEU-35 external counter, the anode output characteristic corresponded to the range from Z = 4 to Z = 21, and the output of the 7th dynode, to the range Z = 6 to Z = 28. The calibration technique was to excite a SiC electroluminescent diode with a high-voltage, short-duration (4—30 nsec) thyratron pulse, providing the phototube with a light input similar to a counter input. Early results from these primary particle counters, obtained during the IQSY, have been a useful supplement to analogous satellite data from the 1959-1962 period, during which solar activity was undergoing the transition from maximum to minimum. Comparative results are seen in Fig. 2, which shows an almost twofold increase in nuclear particles recorded near the solar activity minimum. Table 1 compares data from one orbit of Elektron-2 to that of the 1959 and 1960 satellites and the 1962 Mars-1 probe. To date only data for the Z ≥ 15 particles have been reduced enough for statistical analysis. A large increase in incidence of this size particle was noted during solar eruptions observed in the course of the Elektron-2 flight. Orig. art. has: 18 figures, 1 table, and 1 formula. [SH]

ASSOCIATION: none
Card 2/6

L 2991-66

ACCESSION NR: AT5023633

SUBMITTED: 02Sep65 ENCL: 03 SUB CODE: AA, NP

NO REF SOV: 003 OTHER: 000 ATD PRESS: 4109

Card 3/6

L 2991-66

ACCESSION NR: AT5023633

ENCLOSURE: 01

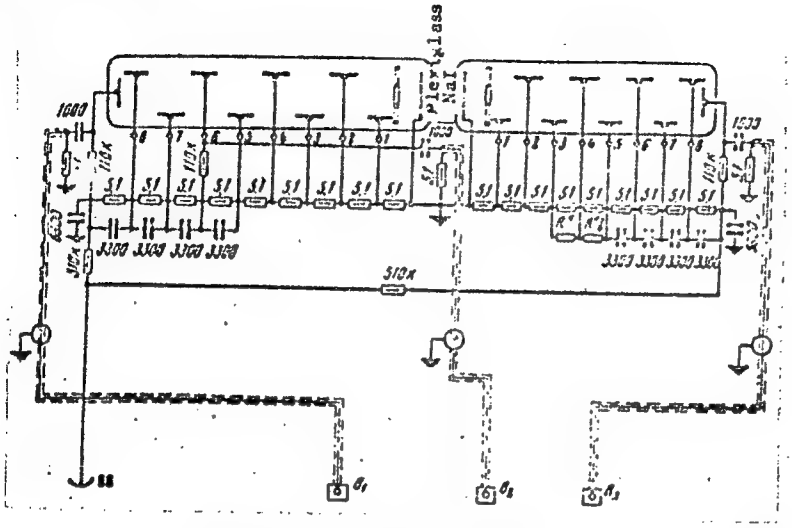


Fig. 1. External counter

B_1, B_2 - Phototube output from Cerenkov counter;
B_3 - from scintillation counter.

Card 4/6

L 2991-66

ACCESSION NR: AT5023633

ENCLOSURE: 02

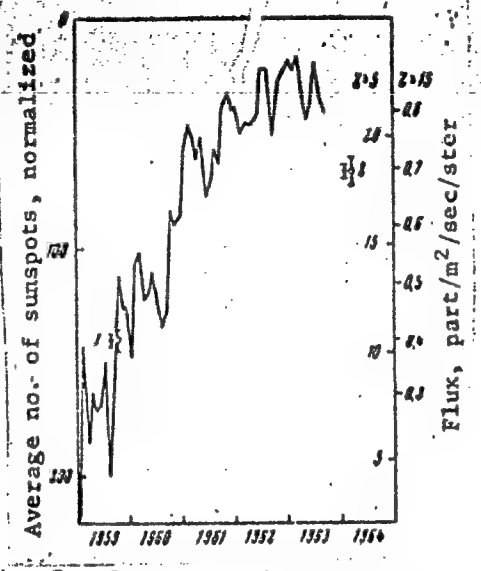


Fig. 2. Sunspot activity vs nuclear flux

Solid circles - Z ≥ 5; open circles - Z ≥ 15; 1 - Lunik-2; 2 - Elektron-2.

Card 5/6

L 2991-66

ACCESSION NR: AT5023633 ENCLOSURE: 03

Vehicles	Nuclear flux, particles/m^2/sec/ster		
	$z>3$	$z>5$	$z>15$
Elektron-2	343,4± 1,4	18,3±0,3	0,60±0,06
Lunik-2	150,6±1.3	10,6±0,3	0,4±0,05
Korabl'-3	129,2±12,9	9,8±0,7	—
Mars-1	333±21	—	—

Card 6/6

L 6954-66 EPF(c)/EWA(h)/EWT(1)/EWT(m)/FCC RPL GW/WW

ACC NR: AP5026226 SOURCE CODE: UR/0048/65/029/010/1846/1852

AUTHOR: Kurnosova, L.V.; Razorenov, L.A./Fradkin, M.I.

ORG: none

TITLE: Composition and energy spectrum of the primary cosmic rays in the moderate-energy region /Report, All-Union Conference on Cosmic Ray Physics held at Apatity, 24-31 August 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.29, no.10, 1965, 1846-1852

TOPIC TAGS: Primary cosmic ray, spectral energy distribution, chemical composition, cosmic radiation composition, interplanetary space.

ABSTRACT: Recent literature on the energy distribution and composition of the primary cosmic rays with energies between 10^8 and 10^{10} eV/nucleon is reviewed. For energies above 2 BeV/nucleon the exponent in the energy spectrum is 1.5 and is the same for all components. The Li-Be-B question can be regarded as settled. The ratio L/S of the number of these nuclei to the number of heavier nuclei is between 0.2 and 0.3, and appears to increase with decreasing energy. The increase of L/S with decreasing energy probably indicates that the low-energy primary cosmic ray particles traverse a greater thickness of interstellar matter than do the high-energy particles. The ratio H/M of the number of heavy to the number of medium-mass nuclei in the pri-

Card 1/3

L 6954-66

ACC NR: AP5026226

nary cosmic radiation appears to be approximately 1/3; there are some discordant data, however, and further measurements are necessary. The ratio H/M is greater in the cosmic radiation than in the universe as a whole. Data on the fluxes of separate nuclei of the heavy group are greatly to be desired. The flux of cosmic rays with energies between 10^8 and 10^9 eV/nucleon is modulated by solar activity and diluted by particles of solar origin. Measurements of α particle fluxes have shown that the high latitude cutoff is a rigidity effect and is therefore due to magnetic fields rather than to ionization losses. If the high latitude cutoff were due to irregular magnetic fields frozen into the interplanetary gas ejected from the sun, one would expect the cosmic ray intensity to vary with distance from the sun. Such a variation is not confirmed by measurements with Pioneer 1, Mars 1, and Mariner 2. A small intensity gradient derived from a comparison of Mariner 2 with terrestrial data is questioned because of the dissimilarity of the rocket and terrestrial instruments. The conclusion of R. Vogt (Phys.Rev.,125, 366 (1962) that there exist low-energy protons of solar origin which, however, do not arrive directly from the sun, is questioned because of the sharp cutoff observed beyond the radiation belts at 52° latitude by Explorer 7. It is suggested that Vogt's protons may have originated in unrecorded solar flares or that the effect of atmospheric secondaries may not have been taken properly into account. The low positron content (20%) of the electron component of the primary cosmic radiation shows that the electrons are not to be accounted for by meson decay. There is evidence that the composition of cosmic rays of solar origin is the same as that of the solar atmosphere. There are some indications that

Card 2/3

L 6954-66
ACC NR: AP5026226

heavy nuclei may be preferentially accelerated on the Sun. The data on this question, however, are contradictory, and more observations with instruments of greater luminosity are necessary. Orig. art. has: 4 figures and 2 tables.

SUB CODE: AA SUBM DATE: 00/--Oct 65 ORIG.REF: 007 OTH REF:021

Card 3/3

L 4089-66 EWT(1)/FCC/EWA(h) GW

ACCESSION NR: AP5026227 UR/0048/65/029/010/1853/1858

AUTHOR: Kurnosova, L.V.; Logachev, V.I.; Platonov, G.F.; Razorenov, L.A.; Sinitsina, V.G.; Suslov, A.A.; Fradkin, M.I. 69 68 B

TITLE: Investigation of low-energy charged particles with the Cosmos 12, Cosmos 15, and Electron 2 satellites /Report, All-Union Conference on Cosmic Ray Physics held at Apatity 24-31 August 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 10, 1965, 1853-1858

TOPIC TAGS: primary cosmic ray, heavy particle, artificial earth satellite, Cerenkov counter, scintillation counter, solar activity

ABSTRACT: Equipment carried by Electron 2 to measure the nuclear component of cosmic rays during the International Year of the Quiet Sun is described briefly and a few preliminary results are reported. The equipment consisted of a Cerenkov counter mounted within the satellite behind 1.5 g/cm^2 of matter and a telescope composed of a Cerenkov counter and a scintillation counter, mounted outside the satellite behind 0.6 g/cm^2 of aluminum. All the counters could record cosmic ray particles with energies exceeding 600 Mev/nucleon. The external telescope recorded nu-

Card 1/3

L 4089-66

ACCESSION NR: AP5026227

clei with charge numbers of 2 or greater, and the external Cerenkov counter, which was part of the telescope, also recorded very heavy nuclei with charge numbers near 30. Nuclei with charge numbers not less than 2, 5, or 15 were recorded in separate channels by the internal Cerenkov counter. The counters were tested and calibrated in the laboratory with the aid of cosmic ray particles; the associated photomultipliers were calibrated with flashes from a SiC diode. Preliminary results are compared with analogous data recorded with the Second Soviet Cosmic Rocket, the Third Soviet Satellite Vehicle, and the Mars 1. A strong negative correlation is indicated between solar activity and the intensity of the nuclear component of the cosmic radiation. The intensity of the nuclear component nearly doubled between the flights of the Second Cosmic Rocket in 1959 and the Electron 2 in 1964. It is anticipated that when the data recorded with the Electron 2 are processed they will provide information concerning the dependence of the nuclear component on solar activity. A number of solar flares occurred in February and March during the flight of the Electron 2. Analysis of the data recorded during these flares is awaited with great interest. Orig. art. has: 1 formula, 6 figures, and 1 table. [15]

ASSOCIATION: Laboratoriya kosmicheskikh luchey Fizicheskogo instituta im. P.N. Lebedeva Akademii nauk SSSR (Cosmic Ray Laboratory, Physics Institute, Academy of Sciences, SSR)

Card 2/3

L 4089-66

ACCESSION NR: AP5026227

O

SUBMITTED: 00 ENCL: 00 SUB CODE: NP,ES

NO REF SOV: 001 OTHER: 000 ATD PRESS: 4127

BVK

Card 3/3

L 38364-66 EWT(1)/FCC TJ/GW

ACC NR: AP6007751 SOURCE CODE: UR/0293/66/004/001/0170/0172

AUTHORS: Kurnosova, L. V.; Mandel'shtam, S. L.; Razorenov, L. A.; Tindo, I. P.; Fradkin, M. I.

ORG: none

TITLE: Occurrences of transient increase in the flux of heavy nuclei following an x-ray radiation burst

SOURCE: Kosmicheskiye issledovaniya, v. 4, no. 1, 1966, 170-172

TOPIC TAGS: x radiation, heavy nucleus, artificial satellite, signal to noise ratio, artificial satellite observation, solar atmosphere, solar x radiation

ABSTRACT: The transient increase in the flux of heavy nuclei with $Z \geq 15$ is discussed for the two periods 22 hr, 31 January, and 02 hr 15 min, 14 February 14, 1964. The duration of the flux was about 16 minutes and seemed to correspond to an x-ray burst recorded by the instruments on the artificial satellite "Elektron-2." The instruments were Cherenkov detectors with an area of 5 cm^2. During this sudden increase, the satellite was at an altitude of 6.6×10^4 km and the wavelength of the recorded x-rays was $\lambda < 10\text{Å}$. It is shown after some detailed discussion that this event could not be caused by statistical fluctuations because the chances for recording 100 such events on the basis of statistical fluctuations in x-rays would be less than 8.2×10^{-2}. Orig. art. has: 2 figures and 2 formulas.

SUB CODE: 04, 20/ SUBM DATE: 26Jul65/ ORIG REF: 004

ACC NR: AP7000517 SOURCE CODE: UR/0048/66/030/011/1755/1759

AUTHOR: Blokh, Ya. L.; Dorman, L. I.; Kurnosova, L. V.; Razorenov, L. A.; Raychenko, L. V.; Suslov, A. A.; Fradkin, M. I.

ORG: none

TITLE: A study of time changes of nuclear flux in primary cosmic radiation on Elektron-2 and Elektron-4 satellites /Paper presented at All-Union Conference on Physics of Cosmic Rays held in Moscow from 15 to 20 November 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 11, 1966, 1755-1759

TOPIC TAGS: primary cosmic ray, cosmic ray measurement, cosmic ray intensity, meteorologic satellite, nuclear flux, neutron flux

ABSTRACT: Some results of a study of primary cosmic radiation conducted using the Elektron-2 and Elektron-4 satellites are given. An integral Cherenkov counter was placed in each satellite to measure fluxes of nuclei with energies greater than 600 Mev/nucleon. Those nuclei belonging to groups $Z \geq 2$, $Z \geq 5$, $Z \geq 15$ were measured by the Elektron-2, and those of group $Z > 20$ by the Elektron-4. Average flux values measured for the above groups of nuclei relative to the average flux values obtained during July 1964 are given in Fig. 1. The above data covers the period from 30 Jan 1964 through 9 Feb 1965. The fluxes

Card 1/3

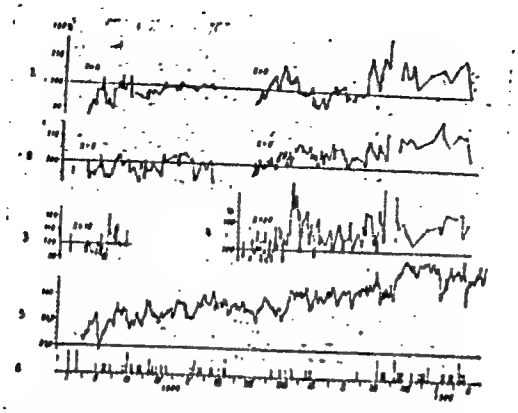


Fig. 1. Relative values of primary cosmic ray flux obtained by Elektron-2 and Elektron-4 satellites and by a ground station

1, 2, 3, 4 - Relative fluxes of nuclei with $Z \geq 2$, $Z \geq 5$, $Z \geq 15$ (right-hand graph) and magnitudes of statistical error of the mid-day values; 5, 6 - cosmic flux values obtained by the neutron monitor, and flux caused by chromospheric flares (the sizes of vertical lines correspond to flares of particles 1, 1+, and 2) registered at the Climax ground station.

ACC NR: AP7000517

measured at midday by the satellites are in close correlation with those measured by the ground stations for quiet ground conditions. It is noted that nuclear flux increased by a factor of 1.7—2 during the period from 1959 to 1964. During the same period the flux registered by a neutron monitor at the Climax ground station increased by about 30%. During 1964—1965 as was anticipated the nuclear flux increased by about 15% for nuclei with $Z \geq 2$ and $Z \geq 5$. The accuracy of measurements of the flux increase of nuclei with $Z > 20$ during the flight of the Elektron-4 satellite was impaired by several rises in flux and by significant statistical errors. Orig. art. has: 3 figures.

[WA-75]
[IV]

SUB CODE: 04, 18/20/ SUBM DATE: none/ ORIG REF: 007/
OTH REF: 007

Card 3/3

KOVALEVSKAYA, I.L.; KURNOSOVA, N.A.; SHCHEGLOVA, Ye.S.; SHIPOVA, Ye.P.

Immunological changes in children vaccinated with a dry alcoholic typhoid-paratyphoid B divaccine. Zhur. mikrobiol., epid. i immun. 33 no.1:46-50 Ja '62. (MIRA 15:3)

1. Iz Moskovskogo instituta epidemiologii, mikrobiologii i gigiyeny.

(VACCINES)
(TYPHOID FEVER--PREVENTIVE INOCULATION)
(PARATYPHOID FEVER)

KOVALEVSKAYA, I.L.; EPSHTEYN-LITVAK, R.V.; DMITRIYEVA-MAVIKOVICH, Ye.M.; KURNOSOVA, N.A.; SHCHEGLOVA, Ye.S.; FERDINAND, Yu.M.; KHOMIK, S.R.; MAKHLINOVSKIY, L.P.; PETROVA, S.S.; GOLUBOVA, Ye.Ye.; GONCHAROVA, Z.I.; SARMANEYEV, A.P.; SIZINTSEVA, V.P.; Primimali aktivnyye. MEDYUKHA, G.A.; OSOKINA, L.A.; RACHKOVSKAYA, Yu.K.; OSOVTSEVA, O.I.; DEDUSENKO, A.I.; KOVALEVA, L.S.; KARASHEVICH, V.P.; CHEBOTAREVICH, N.D.; GRIGIN', T.K.; SKUL'SKAYA, S.D.; KECHETZHIYEV, B.A.; DEMINA, A.S.; ZUS'MAN, R.T.; YESAKOV, P.I.; SYSOYEVA, Z.A.; ZINOV'YEVA, I.S.; FAL'CHEVSKAYA, A.A.; DENISOVA, B.D.; TIMOFEYEVA, R.G.; SIRKASOVA, A.V.; LYANTSMAN, S.G.

Reactivity and immunological and epidemiological effectiveness of alcoholic typhoid and paratyphoid fever vaccines in school children. Zhur. mikrobiol., epid. i immun. 33 no.7:72-77 Jl '62. (MIRA 17:1)

1. Iz Moskovskogo, Rostovskogo, Omskogo institutov epidemiologii i mikrobiologii, Stavropol'skogo instituta vaktsin i syvorotok i Ministerstva zdravookhraneniya RSFSR. 2. Rostovskiy institut epidemiologii i mikrobiologii (for Kovaleva). 3. Stavropol'skiy institut vaktsin i syvorotok (for Sysoyeva). 4. Kuybyshevskiy institut epidemiologii i mikrobiologii (for Zinov'yeva). 5. Saratovskaya gorodskaya sanitarno-epidemiologicheskaya stantsiya (for Lyantsman)

VIL'SHANSKAYA, F.L.; KURNOSOVA, N.A.

Comparative growth rate of Salmonella and dysentery bacilli in culture media. Vak. i syv. no.1:223-227 '63. (MIRA 18:8)

1. Moskovskiy institut epidemiologii i mikrobiologii.

VIL'SHANSKAYA, F.L.; KURNOSOVA, N.A.; LARINA, N.M.; KOZHEVITSKAYA, O.B.; RAYKHSHTAT, G.N.

Data on the etiology and epidemiology of acute intestinal diseases in adults. Zhur. mikrobiol., epid. i immun. 40 no.2:66-70 F '63. (MIRA 17:2)

1. Iz Moskovskogo instituta epidemiologii i mikrobiologii i sanitarno-epidemiologicheskoy stantsii Sverdlovskogo rayona Moskvy.

VIL'SHANSKAYA, F.L.; KURNOSOVA, N.A.

Biochemical, antigenic and biological characteristics of Salmonella tennessee. Zhur. mikrobiol., epid. i immun. 40 no.11:141 N '63.
(MIRA 17:12)

1. Iz Moskovskogo nauchno-issledovatel'skogo instituta epidemiologii i mikrobiologii.

KURNOSOVA, N.A.; VIL'SHANSKAYA, F.L.

Data on the epidemiology of salmonellosis. Zhur. mikrobiol., epid. i immun. 41 no.4:105-110 Ap '64. (MIRA 18:4)

1. Moskovskiy institut epidemiologii i mikrobiologii.

KURNOSOVA, N.A.; [illegible], A. .; [illegible], L.A.; [illegible], V.A.; KIRYUSHINA, L.A.; MANOLOVA, E.F.; [illegible], A.Ye.; TARASOVA, M.A.; PIROGOVA, A.I.; PIROGOV, I.Ya.; AKOPYAN, K.A.; BABUNASHVILI, N.P.; PROTSENKO, G.A.; PUNSKAYA, I.G.; BURMISTROVA, O.G.; POGOREL'SKAYA, S.A.; D'YACHENKO, T.F.; TOPURIYA, I.I.; MATABELI, G.V.; GIGITASHVILI, M.S.; VACHNADZE, T.G.; MAZURIN, N.D.; NABIYEV, E.G.; BLOKHOV, V.P.

Abstracts. Zhur. mikrobiol., epid. i immun. 41 no.4:142-147 Ap '64. (MIRA 18:4)

1. Moskovskiy institut epidemiologii i mikrobiologii (for Kurnosova). 2. Falcheskaya rayonnaya bol'nitsa Moldavskoy SSR i Vinnitskiy meditsinskiy institut imeni Pirogova (for Bondarenko). 3. Stavropol'skiy institut vaktsin i syvorotok (for Bakhman). 4. Kaluzhskiy oblastnoy otdel zdravookhraneniya (for Yavrumov, Kiryushina). 5. Donetskiy meditsinskiy institut (for Manolova). 6. Tbilisskaya rayonnaya imeni [illegible] sanitarno-epidemiologicheskaya stantsiya (for Akopyan, Babunashvili). 7. Kemerovskiy meditsinskiy institut (for Protsenko). 8. Turkmenskiy meditsinskiy institut (for Punskaya, Burmistrova). 9. Gor'kovskiy institut epidemiologii i mikrobiologii i Gor'kovskaya rayonnaya sanitarno-epidemiologicheskaya stantsiya (for Pogorel'skaya, D'yachenko). 10. Institut meditsinskoy parazitologii i tropicheskoy meditsiny imeni Virsaladze Ministerstva zdravookhraneniya Gruzinskoy SSR (for Topuriya, Matabeli, Gigitashvili, Vachnadze). 11. Kazanskiy institut usovershenstvovaniya vrachey (for Nabiyev).

KONTOROVSKIY, A.L., kand.tekhn.nauk; GREBENNIKOVA, T.T., inzh.; KURNOSOVA, N.D., inzh.

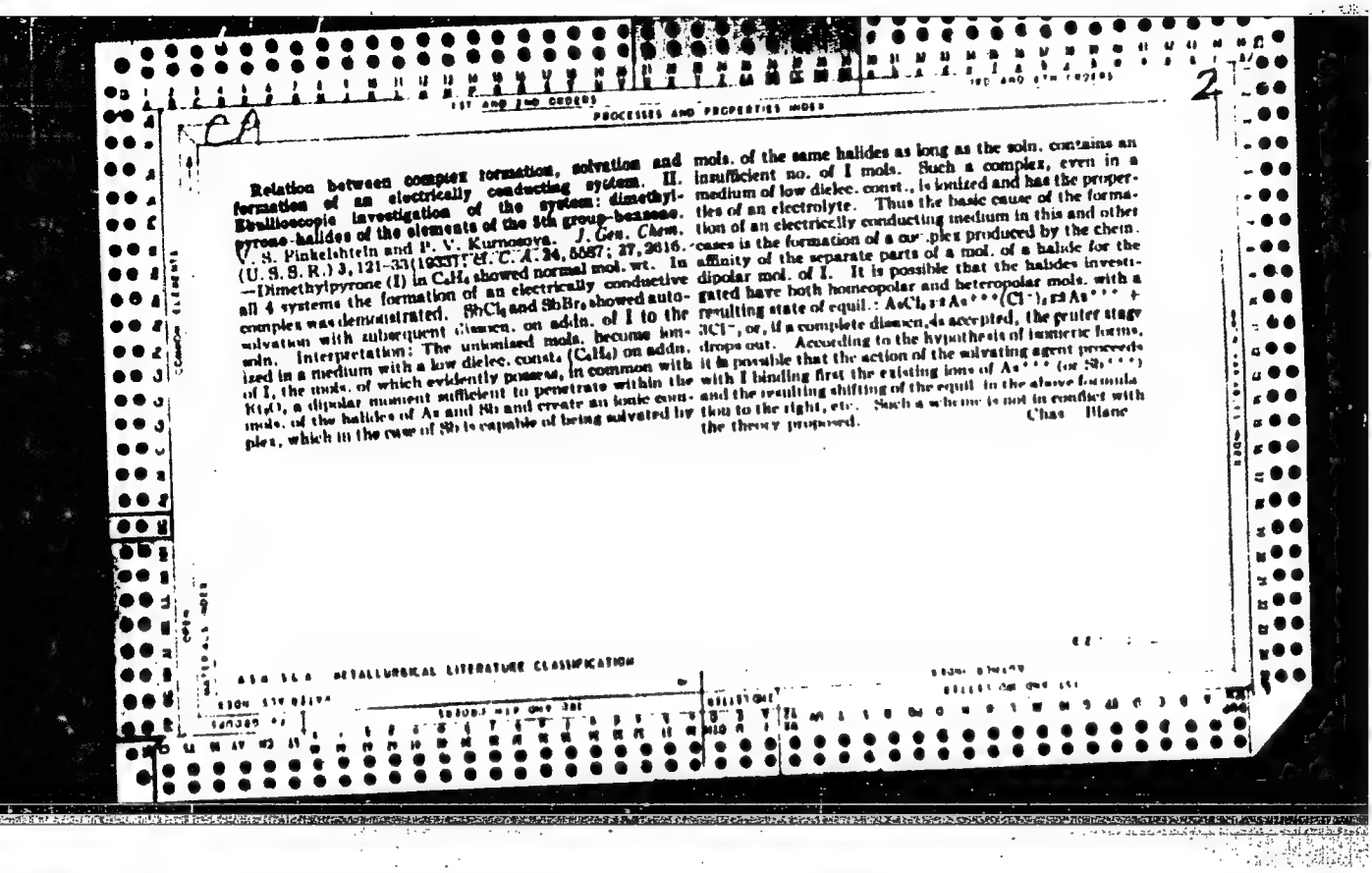
Study of the properties of 12Kh2MFSR pipe steel. Teploenergetika 9 no.8:7-11 Ag '62. (MIRA 15:7)

1. Moskovskiy filial Vsesoyuznogo instituta po proyektirovaniyu organizatsiy energeticheskogo stroitel'stva i Moskovskoye otdeleniye TSentral'nogo koyloturbinnogo instituta.
(Pipe, Steel) (Pipe)

LAGUNTSOV, I.N., kand.tekhn.nauk; GREBENNIKOVA, T.T., inzh.; KURNOSOVA, N.D., tekhnik

Brittle breakdown of pipes in electric power plants with high-pressure parameters. Elek. sta. 33 no.10:33-35 O '62. (MIRA 16:1)

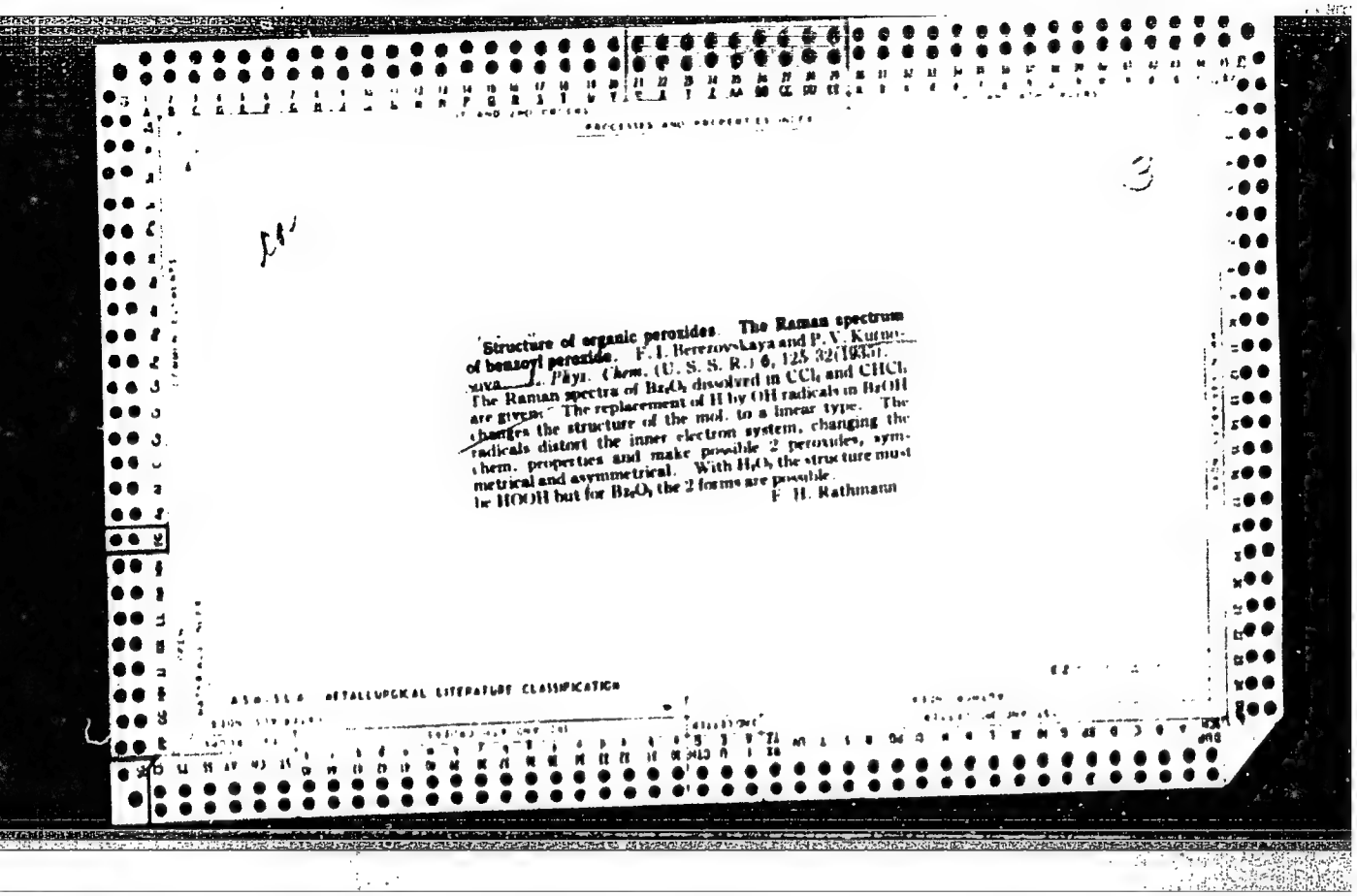
(Steampipes)



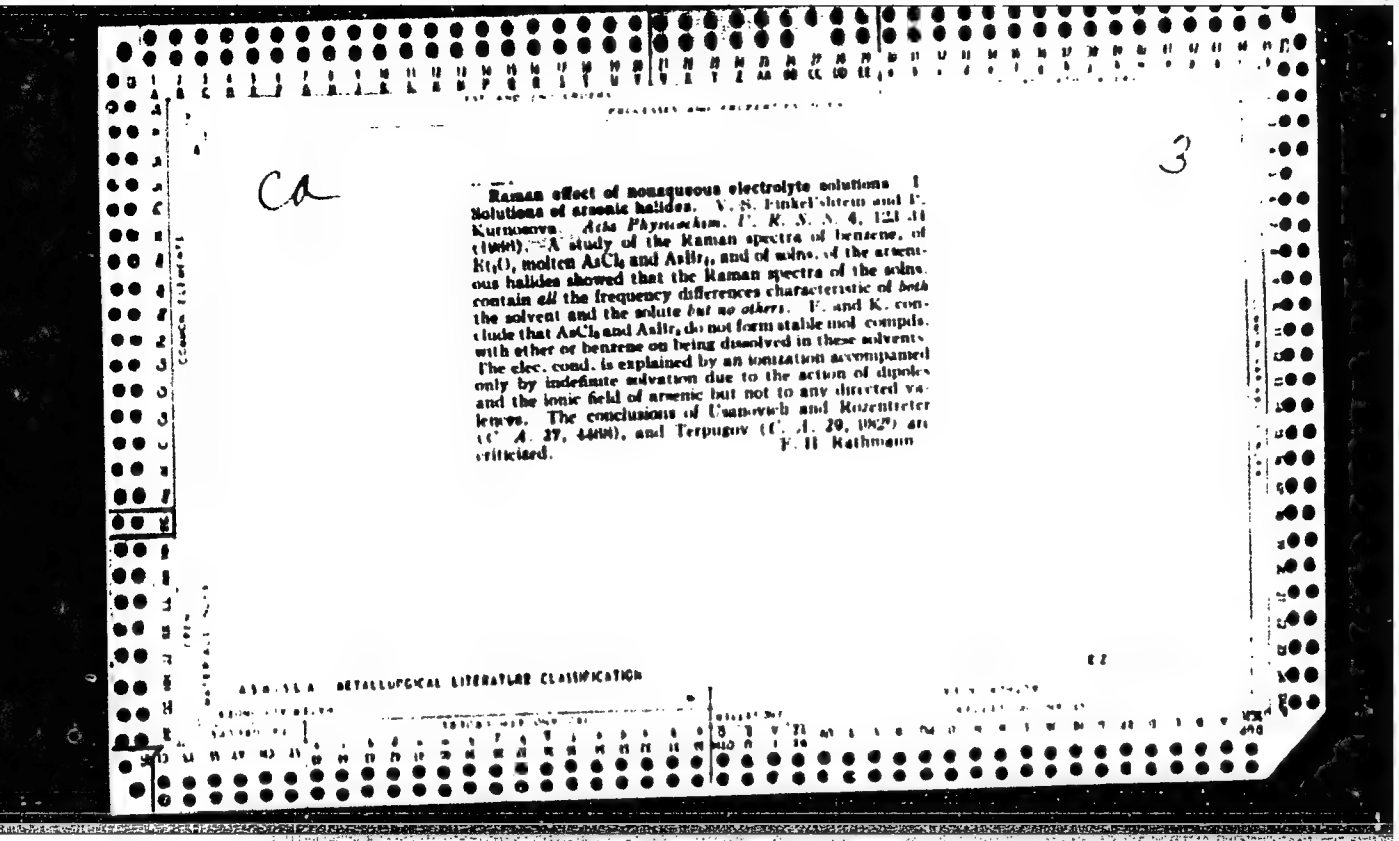
CA

Relation between complex formation, solvation and formation of an electrically conducting system. II. Ebullioscopic investigation of the system: dimethylpyrone-halides of the elements of the 5th group-benzene. (Y. S. Pinkelshtein and P. V. Kurnosova. *J. Gen. Chem.* (U. S. S. R.) 3, 121–33 (1933); *C. C. A.* 24, 5587; 27, 2616.—Dimethylpyrone (I) in C_6H_6 showed normal mol. wt. In all 4 systems the formation of an electrically conductive complex was demonstrated. $SbCl_5$ and $SbBr_5$ showed autosolvation with subsequent dissocn. on addn. of I to the soln. Interpretation: The unionized mols. become ionized in a medium with a low dielec. constt. (C_6H_6) on addn. of I, the mols. of which evidently possess, in common with $SbCl_5$, a dipolar moment sufficient to penetrate within the mols. of the halides of As and Sb and create an ionic complex, which in the case of Sb is capable of being solvated by mols. of the same halides as long as the soln. contains an insufficient no. of I mols. Such a complex, even in a medium of low dielec. constt., is ionized and has the properties of an electrolyte. Thus the basic cause of the formation of an electrically conducting medium in this and other cases is the formation of a complex produced by the chem. affinity of the separate parts of a mol. of a halide for the dipolar mol. of I. It is possible that the halides investigated have both homeopolar and heteropolar mols. with a resulting state of equil.: $AsCl_3 \rightleftarrows As^{+++}(Cl^-)_2 \rightleftarrows As^{+++} + 3Cl^-$, or, if a complete dissocn. is accepted, the greater stage drops out. According to the hypothesis of isomeric forms, it is possible that the action of the solvating agent proceeds with I binding first the existing ions of As^{+++} (or Sb^{+++}) and the resulting shifting of the equil. in the above formula and to the right, etc. Such a scheme is not in conflict with the theory proposed.

Chas Blanc



Structure of organic peroxides. The Raman spectrum of benzoyl peroxide. F. I. Berezovskaya and P. V. Kuzmenkova. *Zhur. Fiz. Khim.* (U. S. S. R.) 6, 125-32(1935). The Raman spectra of Bz_2O_2 dissolved in CCl_4 and $CHCl_3$ are given. The replacement of H by OH radicals in BzOH changes the structure of the mol. to a linear type. The radicals distort the inner electron system, changing the chem. properties and make possible 2 peroxides, symmetrical and asymmetrical. With H_2O_2 the structure must be HOOH but for Bz_2O_2 the 2 forms are possible.
F. H. Rathmann

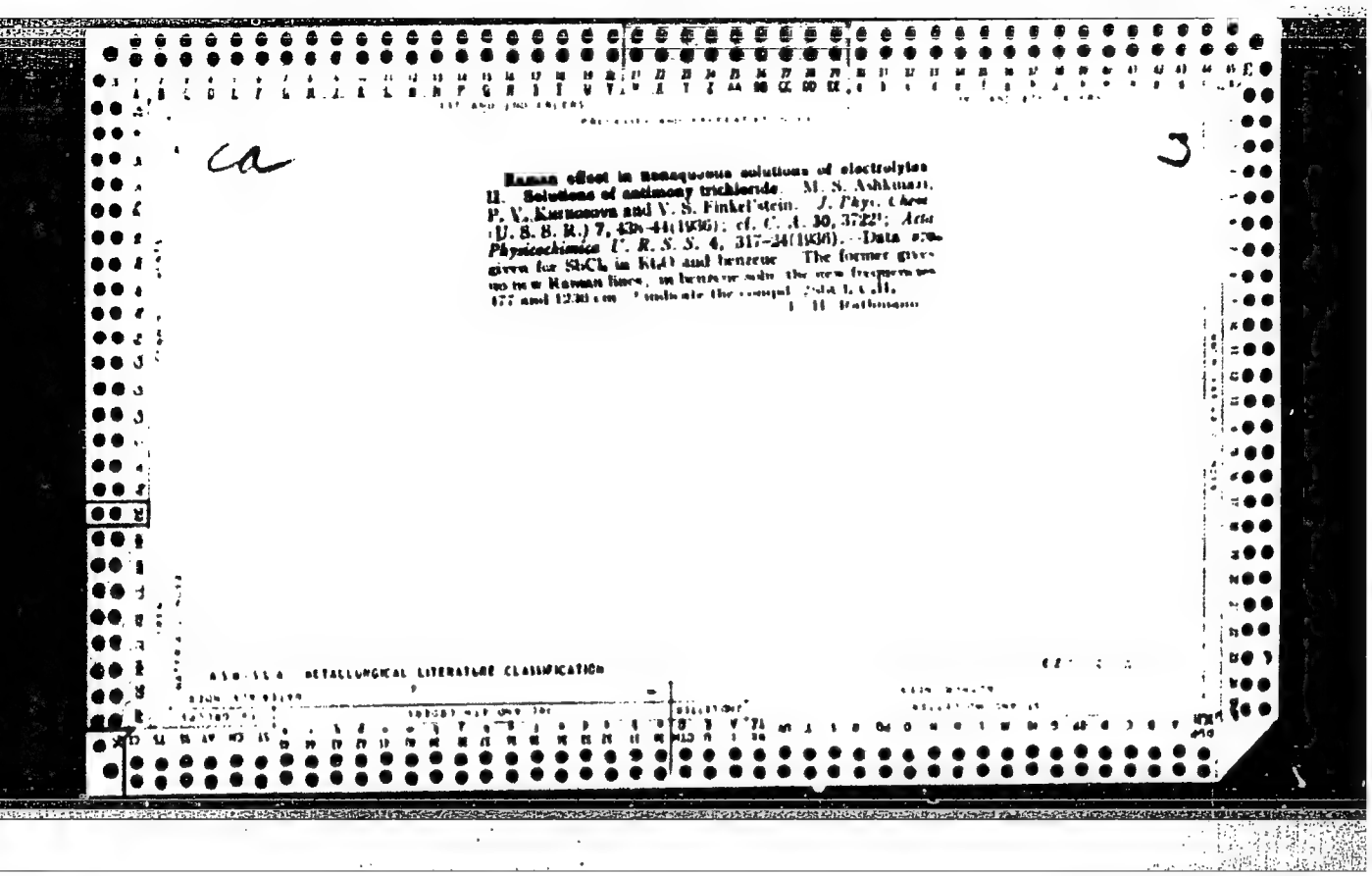


CA

3

Raman effect of nonaqueous electrolyte solutions. I. Solutions of arsenic halides. V. S. Finkel'shtein and P. Kurnosova. *Acta Physicochim. U. R. S. S.* 4, 123-31 (1936).—A study of the Raman spectra of benzene, of Et_2O, molten $AsCl_3$ and $AsBr_3$, and of solns. of the arsenous halides showed that the Raman spectra of the solns. contain *all* the frequency differences characteristic of *both* the solvent and the solute *but no others*. F. and K. conclude that $AsCl_3$ and $AsBr_3$ do not form stable mol. compds. with ether or benzene on being dissolved in these solvents. The elec. cond. is explained by an ionization accompanied only by indefinite solvation due to the action of dipoles and the ionic field of arsenic but not to any directed valence. The conclusions of Usanovich and Rozentreter (*C. A.* 27, 4408), and Terpugov (*C. A.* 29, 1927) are criticized. P. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

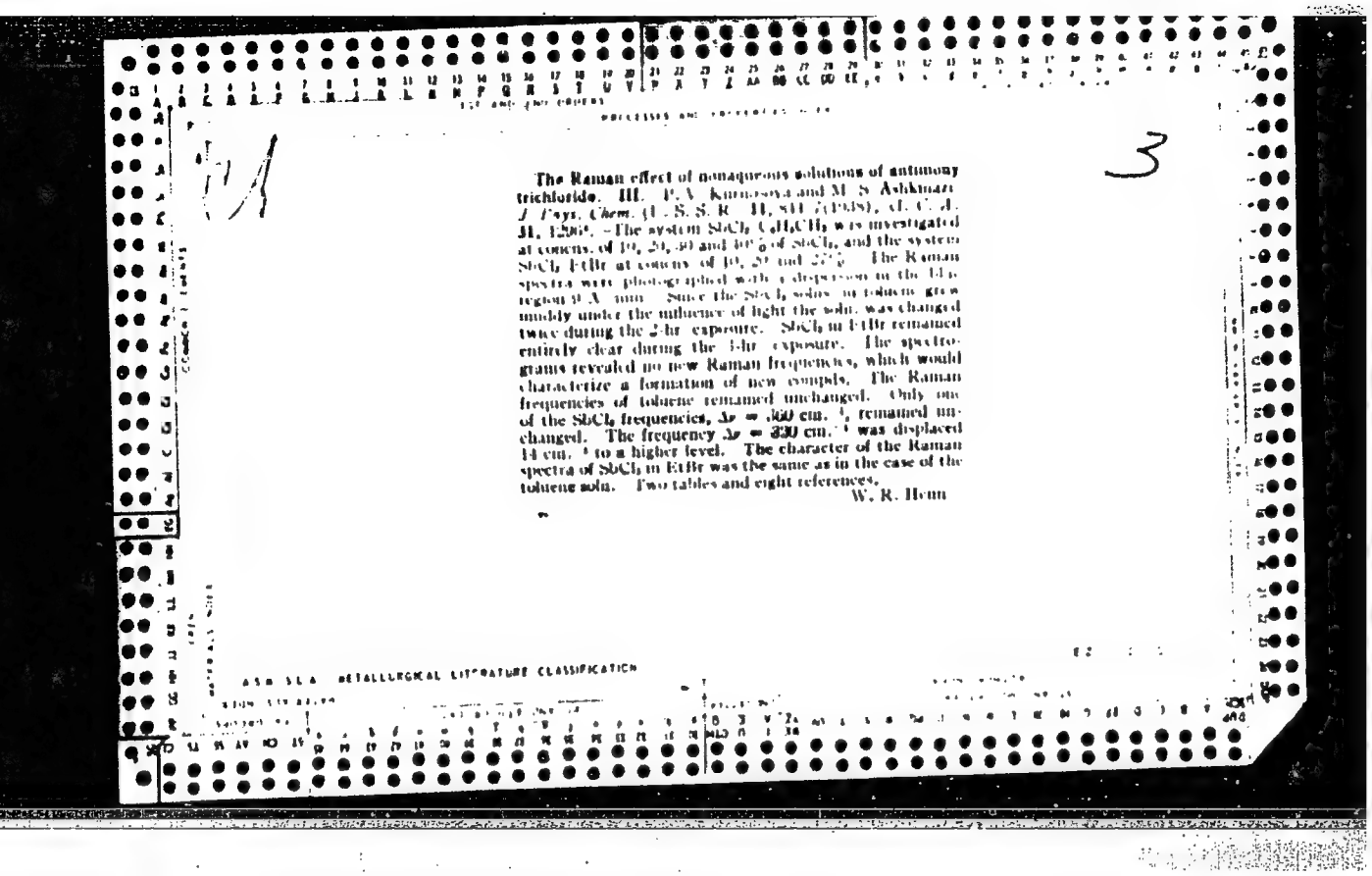


Ca

3

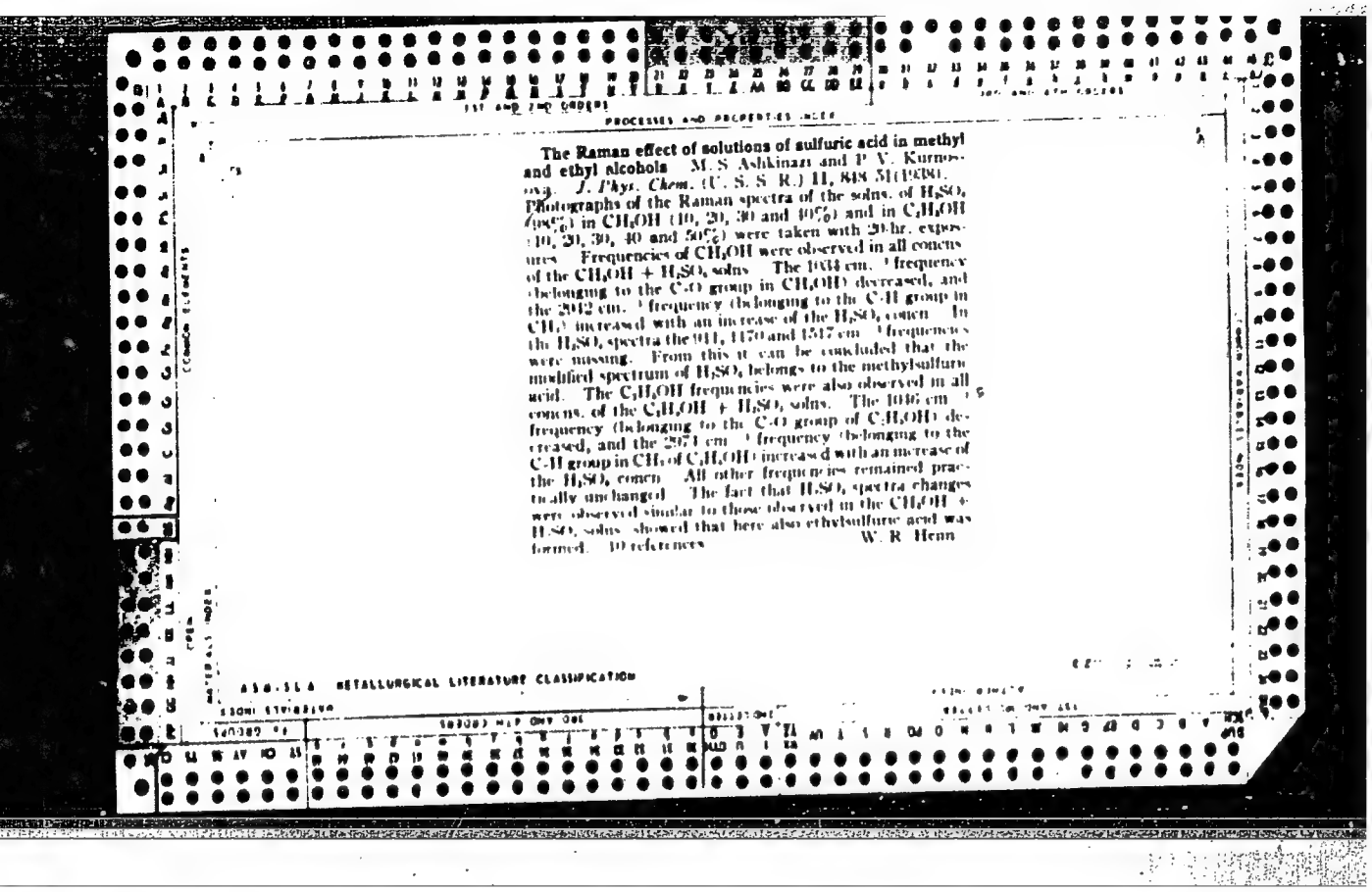
Raman effect in nonaqueous solutions of electrolytes. II. **Solutions of antimony trichloride.** M. S. Ashkinazi, P. V. Kuznesova and V. S. Finkel'stein. *J. Phys. Chem. (U. S. S. R.)* 7, 439–44(1936); cf. *C. A.* 30, 3722⁵; *Acta Physicochimica U. R. S. S.* 4, 317–34(1936). Data are given for $SbCl_3$ in $SbCl_3$ and benzene. The former gives no new Raman lines, in benzene only the new frequencies 477 and 1230 cm.⁻¹ indicate the complex $SbCl_4^-$. H. Bathmann

METALLURGICAL LITERATURE CLASSIFICATION



The Raman effect of nonaqueous solutions of antimony trichloride. III. P. V. Kamenova and M. S. Ashkinazi. *J. Phys. Chem.* (U. S. S. R.) 11, 811-7 (1938). cf. C. A. 31, 1256°. - The system $SbCl_3$-$C_6H_5CH_3$ was investigated at concns. of 10, 20, 30 and 40% of $SbCl_3$, and the system $SbCl_3$-EtBr at concns. of 10, 20 and 25%. The Raman spectra were photographed with a dispersion in the blue region 9 A. per mm. Since the $SbCl_3$ solns. in toluene grew muddy under the influence of light the soln. was changed twice during the 3-hr. exposure. $SbCl_3$ in EtBr remained entirely clear during the 3-hr. exposure. The spectrograms revealed no new Raman frequencies, which would characterize a formation of new compds. The Raman frequencies of toluene remained unchanged. Only one of the $SbCl_3$ frequencies, $\Delta\nu$ = 300 cm.$^{-1}$, remained unchanged. The frequency $\Delta\nu$ = 330 cm.$^{-1}$ was displaced 14 cm.$^{-1}$ to a higher level. The character of the Raman spectra of $SbCl_3$ in EtBr was the same as in the case of the toluene soln. Two tables and eight references.

W. R. Henn



The Raman effect of solutions of sulfuric acid in methyl and ethyl alcohols M. S. Ashkinazi and P. V. Kurnosova. *J. Phys. Chem.* (U. S. S. R.) II, 848 M(1938). Photographs of the Raman spectra of the solns. of H_2SO_4 (95%) in CH_3OH (10, 20, 30 and 40%) and in C_2H_5OH (10, 20, 30, 40 and 50%) were taken with 20-hr. exposures. Frequencies of CH_3OH were observed in all concns. of the $CH_3OH + H_2SO_4$ solns. The 1034 cm.$^{-1}$ frequency belonging to the C-O group in CH_3OH decreased, and the 2942 cm.$^{-1}$ frequency (belonging to the C-H group in CH_3) increased with an increase of the H_2SO_4 concn. In the H_2SO_4 spectra the 911, 1170 and 1517 cm.$^{-1}$ frequencies were missing. From this it can be concluded that the modified spectrum of H_2SO_4 belongs to the methylsulfuric acid. The C_2H_5OH frequencies were also observed in all concns. of the $C_2H_5OH + H_2SO_4$ solns. The 1046 cm.$^{-1}$ frequency (belonging to the C-O group of C_2H_5OH) decreased, and the 2971 cm.$^{-1}$ frequency (belonging to the C-H group in CH_3 of C_2H_5OH) increased with an increase of the H_2SO_4 concn. All other frequencies remained practically unchanged. The fact that H_2SO_4 spectra changes were observed similar to those observed in the $CH_3OH + H_2SO_4$ solns. showed that here also ethylsulfuric acid was formed. 10 references W. R. Henn

ALEKSEYEVA, V.A., dots.; KORCHAGIN, L.V., dots.; KURNOSOVA, P.V., dots.; KOVALOVA, A.F., assistent; KARASIK, Ye.E., inzh.

Clarification of suspensions by the coagulation method. Ugol' Ukr. 4 no.1:11-13 Ja '60. (MIRA 13:5)

1. Dnepropetrovskiy gornyy institut.
(Coal preparation--Equipment and supplies)

EWT(1)

ACC NR: AP6012153 SOURCE CODE: UR/0413/66/000/007/0070/0071

AUTHORS: Pyatnitskiy, A. I.; Nadol'nikov, A. G.; Aranovich, R. M.; Kurnosova, V. M. 33

ORG: none

TITLE: Cryostat for radiation receivers. Class 42, No. 180383 [announced by All-Union Electrical Engineering Institute im. V. I. Lenin (Vsesoyuznyy elektrotekhnicheskiy institut)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 7, 1966, 70-71

TOPIC TAGS: cryostat, cooling

ABSTRACT: This Author Certificate presents a cryostat for radiation receivers. In its cooling system the coolant is formed by throttling compressed gas which is initially cooled in a helical heat exchanger first by a coolant and then by the return flow of liquefied gas passing through the liquefying chamber. To increase the efficiency and usefulness of the cryostat and to simplify its design, the upper part of the heat exchange helix passes into a heat conducting tube which is placed in the chamber with the liquid coolant (see Fig. 1). The lower part passes through a vacuum tube with the return flow of liquefied gas, which is connected with the liquefying chamber.

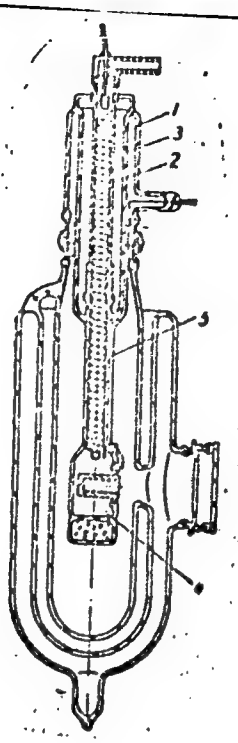
UDC: 621.565.4

Card 1/2

L 09000-67

ACC NR: AP6012153

Fig. 1. 1 - heat exchange helix; 2 - heat conducting tube; 3 - chamber with liquid coolant; 4 - liquefying chamber; 5 - return gas flow tube



Orig. art. has: 1 diagram.

SUB CODE: 20/13/ SUBM DATE: 07Jan65

Card 2/2 mat

MAKSIMOVA, L.I.; KURNOSOVA, Ye.F., vrach

Rational utilization of the crèche. Vop. okh. mat. i det. 6 no.8: 66-69 Ag '61. (MIRA 15:1)

1. Glavnyy pediatr Gor'kovskogo oblastnogo otdela zdravookhraneniya (for Maksimova). 2. Yasli No.1 Dzerzhinska Gor'kovskoy oblasti (for Kurnosova).

(DAY NURSERIES)

NAKHABIN, V.P., inzh.; MIKULINSKIY, A.S., doktor tekhn.nauk, prof.; SHIRER, G.B., kand.tekhn.nauk; NEVSKIY, R.A., inzh.; SHOLOKHOV, V.F., inzh.; YEFREMKIN, V.V., kand.tekhn.nauk; ZHUCHKOV, V.I., inzh.; KURNUSHKO, O.V., inzh.

Preparation of silicomanganese and ferromanganese from carbonate ores of the "Polunochnoye" deposit. Stal' 20 no. 12:1099-1103 D '60. (MIRA 13:12)

1. Zavod ferrosplavov, TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii i Institut metallurgii Ural'skogo filiala AN.
(Silicon-manganese alloys) (Ferromanganese)
(Polunochnoye region--Ore deposits)

NAKHABIN, V.P.; MIKULINSKIY, A.S.; SHIRER, G.B.; NEVSKIY, R.A.; SHOLOKHOV, V.F.; YEFREMKIN, V.V.; ZHUCHKOV, V.I.; KURNUSHKO, O.V.; EPSHTEYN, N.Yo.; PANFILOV, S.A.; Prinimali uchastiye: IL'IN, V.M.; ZEMLYAKOV, V.V.; SHMULEVICH, Ye.Ya.

Smelting out manganese-silicon and ferromanganese from Polunochnoye deposit ores in a furnace with a power of 10,500 kilovolt-amperes. Trudy Inst. met. UFAN SSSR no.7:127-145 '61. (MIRA 16:6)
(Manganese alloys) (Sintering)

MIKULINSKIY, A.S.; NAKHABIN, V.P.; SHIRER, G.B.; NEVSKIY, R.A.; STEBLYANKO, N.V.; YEFREMKIN, V.V.; VOROB'YEV, V.P.; ZHUCHKOV, V.I.; KURNUSHKO, O.V.

Change in the position of the electrodes and the capacity coefficient in obtaining manganese alloys. Trudy Inst. met. UFAN SSSR no.7: 147-151 '61. (MIRA 16:6)

(Manganese alloys) (Sintering)